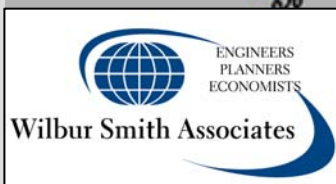
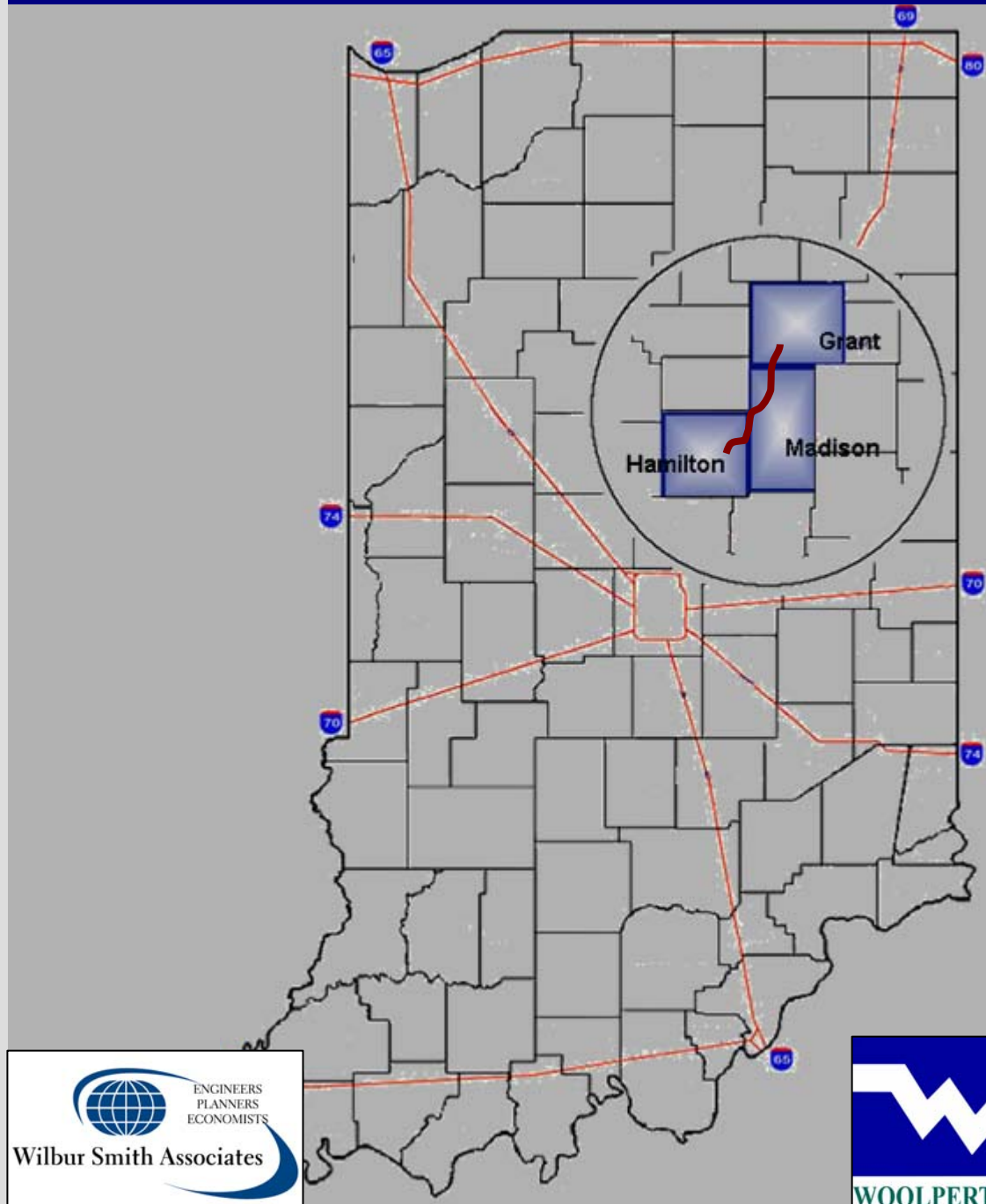




Indiana Department of Transportation

CRASH MODIFICATION FACTOR STUDY from Noblesville to Marion



August 2005

TABLE OF CONTENTS

TABLE OF CONTENTS	1
1.0 INTRODUCTION	4
1.1 PROJECT BACKGROUND	5
1.1.1 STUDY AREA	5
1.1.2 INDOT 2000-2025 LONG RANGE PLAN	5
STATEWIDE MOBILITY CORRIDORS	5
REGIONAL MOBILITY CORRIDORS	7
LOCAL ACCESS CORRIDORS	7
1.1.3 EXISTING HIGHWAY NETWORK	8
1.1.4 HISTORY / CONDITION OF EXISTING INFRASTRUCTURE	9
VISIBLE ROADWAY DEFICIENCIES	9
PROGRAMMED IMPROVEMENTS	9
1.1.5 PROJECT HISTORY AND PREVIOUS STUDIES OF THE CORRIDOR	11
1.2 STUDY AREA TRENDS AND FORECASTS	14
1.2.1 POPULATION TRENDS AND FORECASTS	14
1.2.2 DEVELOPMENT TRENDS AND FORECASTS	15
1.3 CRASH ANALYSIS	16
1.4 CAPACITY ANALYSIS	20
1.5 PURPOSE AND NEED	25
1.6 EVALUATION CRITERIA	27
1.7 TYPES OF FACILITIES STUDIED	27

1.8	DEFINING THE “NO-BUILD” OPTION	28
1.8.1	EXISTING HIGHWAY PLANS	28
1.8.2	“NO-BUILD” ALTERNATIVE	30
2.0	CORRIDOR OPTIONS	30
2.1	ALTERNATIVES CONSIDERED	30
ALTERNATIVE NO. 1		31
ALTERNATIVE NO. 2		31
ALTERNATIVE NO. 3		32
FIG. 2.1.3ALTERNATIVE NO. 4		35
ALTERNATIVE NO. 4		36
ALTERNATIVE NO. 5		36
ALTERNATIVE NO. 6		36
ALTERNATIVE 6 (FIG.2.1.6)ALTERNATIVE NO. 7		39
ALTERNATIVE NO. 7		40
3.0	SCREENING OF THE ALTERNATIVES	42
3.1	PURPOSE AND NEED SCREENING CRITERIA	42
REDUCE CRASH FREQUENCY (RISK)		42
PROVIDE LOS C OR BETTER IN 2025		43
3.2	ENVIRONMENTAL SCREENING CRITERIA	48
POTENTIAL FOR AFFECTED ARCHITECTURAL / HISTORIC PROPERTIES		48
POTENTIAL FOR AFFECTED AGRICULTURAL FARMLAND		51
POTENTIAL RESIDENTIAL RELOCATIONS		51
POTENTIAL BUSINESS RELOCATIONS		51
POTENTIAL AFFECTED 4(F) RESOURCES		52
POTENTIAL AFFECTED WETLANDS		52
3.3	ECONOMIC SCREENING CRITERIA	53
TRAVEL EFFICIENCY FEASIBILITY		53
3.4	ENGINEERING SCREEN CRITERIA	54
TOTAL COST		54
CONSTRUCTABILITY		54

PROVIDE SYSTEM CONTINUITY	55
<u>3.5 SATISFY CONGRESSIONAL MANDATE</u>	<u>55</u>
<u>3.6 PUBLIC COMMENT INPUT RATING</u>	<u>55</u>
<u>3.7 SCREENING RESULTS</u>	<u>56</u>
<u>3.8 CONCLUSIONS</u>	<u>57</u>
<u>4.0 SECTIONS OF INDEPENDENT UTILITY</u>	<u>59</u>
<u>4.1 RECOMMENDATIONS AND SUMMARIES FOR PROJECTS OF INDEPENDENT UTILITY</u>	<u>62</u>

1.0 INTRODUCTION

This SR 37 EA/Corridor Study examines the condition of the existing facility, and appropriate measures and timing to address any deficiencies (needs). The study will look at a variety of route options and highway type alternatives and will present findings on whether or not any of the corridor investments are feasible. A purpose and need of this SR 37 EA/Corridor Study have been identified as:

- Reduce the crash frequency (risk).
- Provide a level of service C or better and provide system continuity within the project limits for forecasted traffic volumes for the year 2025.

While the United States Congress named this study in the Transportation Equity Act for the 21st Century (TEA-21) as a High Priority Project for the State of Indiana, it, in itself is not a purpose and need. The Congressional mandate was to “study the feasibility of improvements to SR 37 in Noblesville, Elwood, and Marion.” This mandate is the reason for the study but does not represent a true “purpose” or “need” for any deficiencies present along the corridor, or for any proposed corrective actions. A purpose identifies what improvements should be or could be made to the transportation system to satisfy the identified needs such as reduce crash frequency and improve level of service. Hence, the Congressional mandate is not considered a purpose and need, but alternatives are evaluated based on their ability to comply with the mandate.

Each alternative is evaluated based on its ability to meet the following evaluation criteria:

1. Purpose and Need – Does the alternative reduce crash frequency (risk) and provide a Level of Service C or better and system continuity for the forecasted traffic volumes for the year 2025?
2. Congressional Mandate – Does the alternative comply with the intent of the mandate to study the feasibility of improvements to SR 37 in Noblesville, Elwood, and Marion?
3. Engineering and Cost - Are there any unusual engineering difficulties, and what would each alternative improvement cost the agency?
4. Environmental - Does the alternative have any environmental fatal flaws, and is mitigation for environmental impacts available?
5. Travel Efficiency - Will the highway alternative cause sufficient road user benefits to warrant the investment?

Those alternatives that have fatal flaws, or do not meet purpose and need, are not considered further in this study. The remaining alternatives are considered for inclusion in a finalized EA/Corridor Study or in an Environmental Impact Statement (EIS). The no-build alternative serves as a baseline for comparing impacts of the other alternatives.

1.1 PROJECT BACKGROUND

1.1.1 Study Area

The study area, as depicted in **Figure 1.1.1** is located between the cities of Noblesville and Marion, and is approximately 44 miles in length and includes Hamilton, Tipton, Madison, and Grant counties.

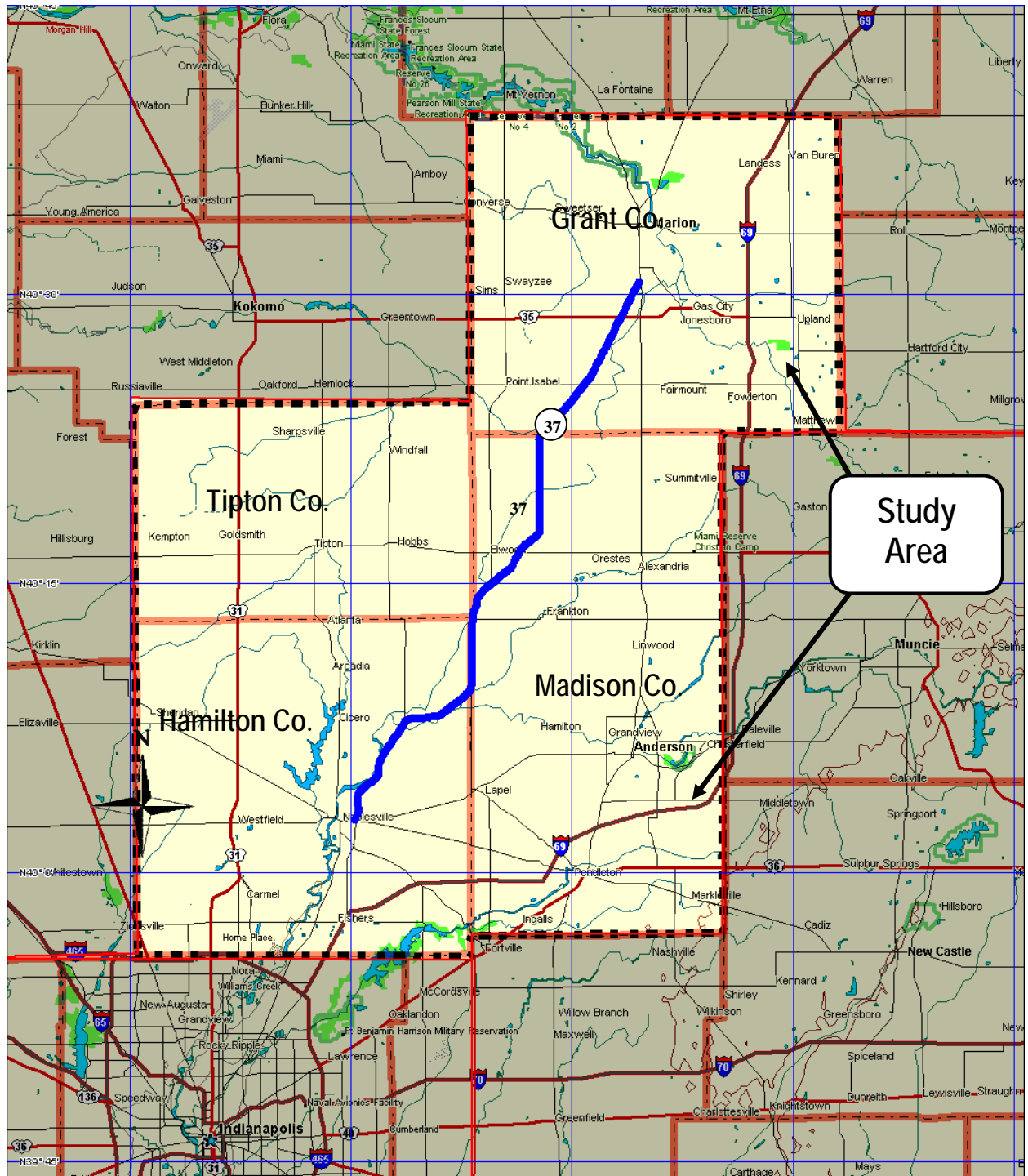
1.1.2 INDOT 2000-2025 Long Range Plan

INDOT has recently completed a Long Range Plan for Indiana's highway system. This Long Range plan will play a vital role in evaluating the alternatives for the SR 37 EA/Corridor Study. Part of the development effort of the 2000-2025 Long Range Plan involved analyzing the information from several other classification schemes to develop a new and simplified planning-level corridor classification scheme for statewide planning purposes. The INDOT Long Range Plan categorizes highway corridors into three separate classifications: Statewide Mobility, Regional, and Local Access Corridors. Each of these corridor types are described below.

Statewide Mobility Corridors

These corridors are the top-end of the highway system and are meant to provide mobility across the state. They provide safe, free flowing, high-speed connections between the metropolitan areas of the state and surrounding states. They serve as the freight arteries of the state and are thus vital for economic development. INDOT has a strategic goal to directly connect metropolitan areas of 25,000 population or greater.

Figure 1.1.1
Regional Map Illustrating Study Area Boundaries



Source: DeLorme 3-D TopoQuads, 1999

Regional Mobility Corridors

The INDOT 2000-2025 Long Range Plan lists SR 37 between Indianapolis and Marion as a Regional Mobility Corridor. These corridors are the middle tier of the highway system and are meant to provide mobility within regions of the state. They provide safe, high-speed connections. The following list details the basic characteristics of a Regional Corridor.

- Mid-level design standards
- High to moderate speed
- Free-flow to the extent practicable in rural areas
- Serves medium distance trips
- Carry medium distance commuter traffic
- Moderate through volumes of traffic
- Moderate commercial vehicle flows
- Potential for heavy local traffic volumes
- Typically, at grade intersections with highways and railroads, with consideration for railroad separation
- High-level two-lane or multi-lane
- Partial access control desirable
- Conventionally routed through cities and towns
- Moderate interaction with non-motorized vehicles and pedestrians

Local Access Corridors

These corridors make up the remainder of the highway system. They are the bottom level of system and are used for lower speed travel, and provide access between location of short distances. (10-15 miles).

1.1.3 Existing Highway Network

The SR 37 EA/ Corridor study will focus on the area between SR 32/38 in Noblesville and SR 9 in Marion. The corridor is approximately 44 miles long. The existing roadway at the southern end of the study area is a four-lane divided highway with full width (10 foot) shoulders from I-69 north 8 miles to Allisonville Road. SR 37 narrows to a two-lane highway just north of Allisonville Road in Noblesville and remains a two lane facility with 2 foot paved shoulders until it intersects SR 9. Traffic signals are present at the intersections of SR 32/38, 191st Street, 206th Street, SR 13 (north junction), SR 28, U.S. 35 / SR 22, and SR 9. Additionally the intersections of South P Street in Elwood, SR 26, and County Road 300 South in Grant County are four-way stops with flashing beacons. Details on each of these intersections are included in **Table 1.1.3**. Left turn lanes on SR 37 have been added at several of the intersections with signals or flashing stop signals. Additionally, the Norfolk Southern Railroad crosses SR 37 in Elwood, between South P Street and SR 28. The posted speed along the corridor is 55 mph with the exception of the areas through Clare (just north of 206th Street) and Elwood (South P Street to County Road 700 West) where the posted speed limit is 45 mph.

Table 1.1.3

Location	Type
SR 32 / 38	Signal with 4-Way Left Turn
191st Street	Signal with Left Turn for SR 37
206th Street	Signal
SR 13 (north junction)	Signal
South P Street (Elwood)	Flashing - All way stop
SR 28	Signal with 4-Way Left Turn
SR 26	Flashing - All way stop
U.S. 35 / SR 22	Signal
County Road 300 S (Grant Cty)	Flashing - All way stop
SR 9	Signal with 4-Way Left Turn

Summary of Intersections

The adjacent land use is primarily farmland, with scattered residential and business development. With only a few exceptions, businesses adjacent to the highway are located within the Corporate City Limits of Noblesville, Elwood, and Marion. These businesses vary from small restaurants, motels, and car dealerships to large manufacturing corporations. Two of the largest businesses near the SR 37 corridor are Red Gold Incorporated and Elsa Corporation. Together, these two businesses employ 1600 individuals, and are both located near Elwood. Several residential neighborhoods are also located within the cities mentioned above, and throughout several small unincorporated towns along the corridor such as Clare, Strawtown, and Rigdon. The remaining residential areas are scattered, low-density, single family homes or farm houses. Additionally, several schools are located on or near SR 37, and both Marion and Elwood have airports directly adjacent to the corridor.

1.1.4 History / Condition of Existing Infrastructure

SR 37 was originally constructed in the mid 1920's between Marion County and the southern corporation line of Noblesville as a two-lane, 20 foot wide concrete paved road. The concrete roadway was then extended north to the Madison/Grant County line in the late 1930's, and continued to SR 9 as a bituminous pavement roadway in 1940. Since that time, several resurfacing, reconstruction, widening, maintenance, and intersection improvement projects have been completed on the roadway. Based on a cursory inspection of the roadway condition, the pavement between Noblesville and Elwood appears to be in fair to good condition. The pavement through Elwood is in fair condition, with the pavement in the intersections showing the greatest need for repair. One section of pavement north of Elwood, between U.S. 35 / SR 22 and Marion Corporate Limits is in need of rehabilitation because of deterioration at the edge of pavement. Several bridges (spans over 20 feet) and small drainage structures are also located along this corridor. The largest structure is located over the White River in Strawtown, and it is in good condition, as this bridge was built in 1976 and rehabilitated in 1999. No obvious deficiencies were noted in the INDOT inspection reports.

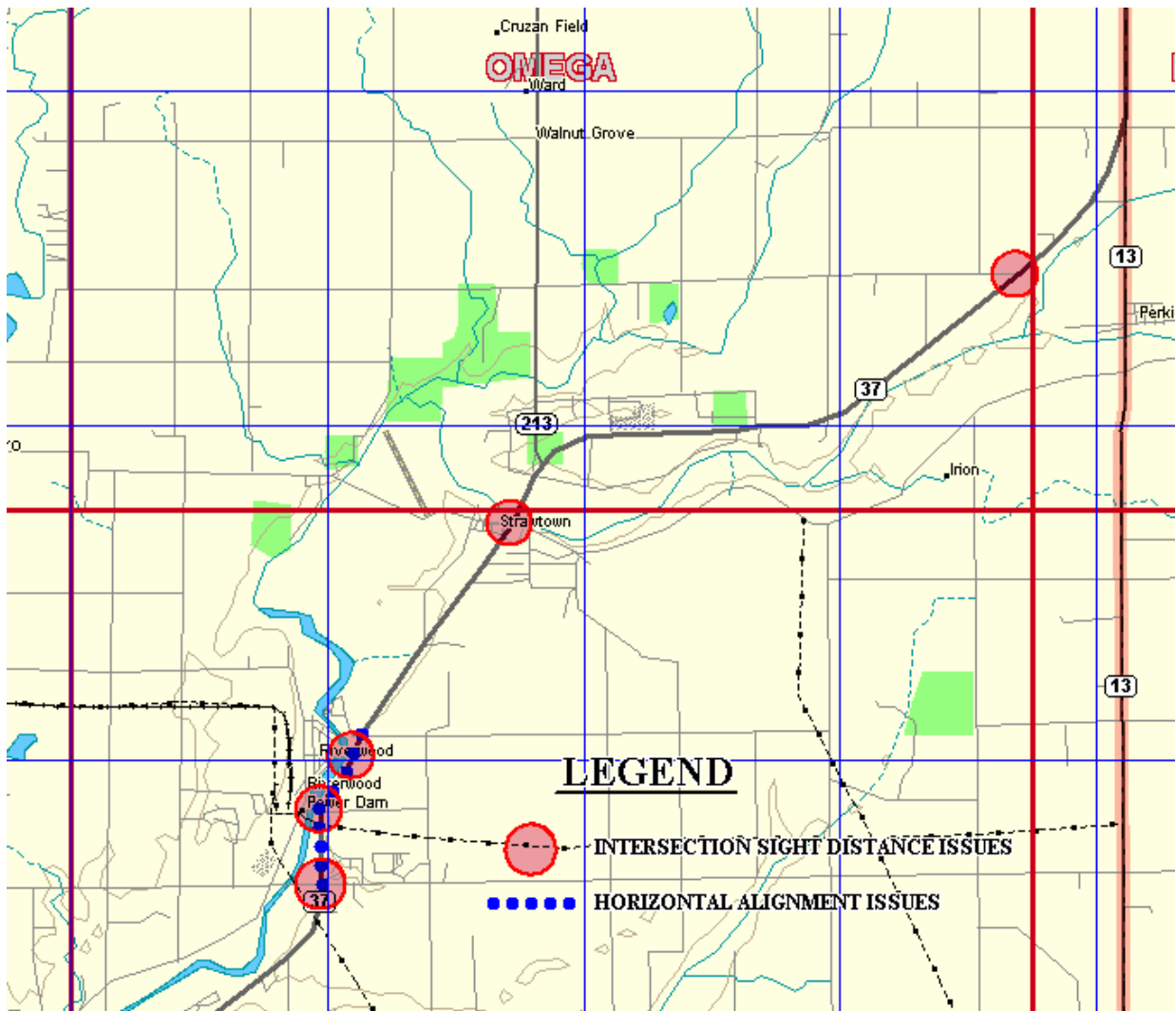
Visible Roadway Deficiencies

The most noticeable roadway deficiencies exist just north of Noblesville and through the town of Clare where vertical and horizontal alignment problems are present. Sight distance at the intersections of SR 37 with 206th Street, 211th Street, and Clare Avenue appears to be minimal, most likely due to substandard vertical alignment. The horizontal alignment in this area also appears substandard. However, physical constraints (i.e. the White River and nearby terrain) would make it very difficult to improve the horizontal alignment without realigning the entire roadway. The intersections at Strawtown Road and 246th Street also appeared to have intersection sight distance deficiencies. **Figure 1.1.4** illustrates the areas of known stopping and intersection sight distance issues were noticed.

Programmed Improvements

The INDOT 2000-2025 Long Range Plan includes several programmed improvements for the SR 37 Corridor, which are detailed in Table 1.2.1 of the *Preliminary Alternatives Document*. Such improvements will aid in creating the “No-Build” Alternative, against which all other alternatives will be compared in this study.

Figure 1.1.4
Locations of Known Highway Deficiencies



Source: DeLorme 3-D TopoQuads, 1999

1.1.5 Project History and Previous Studies of the Corridor

Since 1990, five independent studies have been performed on various portions of the corridor by several different agencies, with varying recommendations for improvements. This section summarizes each study and its recommendations.

The State of Indiana (INDOT) began examining the SR 37 corridor in 1990, after a request from several state representatives and senators. The impetus behind this request was the desire to promote economic development along the corridor and the idea that the addition of travel lanes to SR 37 would make this area of the state more accessible.

A proper adjustment of the existing SR 37 design could reduce or remove development disincentives related to transportation by decreasing vehicle operating costs and travel times, and reducing the likelihood of crashes. The corridor study completed by INDOT in 1990 concluded that improvements in the form of a four-lane divided highway were not warranted. However, the study evaluated in detail only one alternative, expanding the roadway to four lanes.

In 1994, the **SR 37 Highway Improvement Task Force, submitted by the Madison County Council of Governments along with local city and county officials from Hamilton, Madison, and Grant Counties** wrote a report, *State Road 37: Corridor Improvement Project*, that expressed the belief that improvements would result in greater accessibility to the Indianapolis region for a larger and more diversified business and service sector. The three counties making up the task force were Hamilton, Madison and Grant counties, three of the four counties included in this corridor study. As the economic and industrial composition analysis of that report shows, these counties have begun the transition from a manufacturing-based economy to a more diversified economic system. These three counties also face the issue of a growing number of individuals commuting between communities for work.

The **Indiana Economic Development Council** put together the *East Central Indiana Comprehensive Development Strategy* in 2000 and included seven counties in the region. Grant and Madison counties were included in those seven, although Hamilton was not. The authors of that study have determined that the East Central region is strongly interconnected and commuting patterns suggest that this is a regional labor market area. The commuting data also suggests that residents are commuting to and from neighboring communities as well as from Indianapolis, Kokomo and Fort Wayne. Because of both the economic and transportation issues facing the region, the Council believes that part of the economic development strategy should be to widen SR 37 from two lanes to four lanes, from Marion to Noblesville, and make this a priority for the region.

SR 37 Added Travel Lanes Study prepared by INDOT

Year Performed: 1990

Reason for Study: Requested by the Indiana House of Representatives and Senate (House Concurrent Resolution 60) to study the feasibility of widening SR 37 from two-lanes to four-lanes

between Noblesville and Marion. Primary intent of the study was to determine if the upgrade of SR 37 would promote economic development along the corridor.

Study Limits: Just north of Noblesville to SR 9.

Method: The corridor was broken up into six segments and each was evaluated separately. As a part of the study, the benefits resulting from the improvement of each section were evaluated and scored on 5 separate categories: safety, capacity, geometrics, functional classification, and socioeconomics/ public input. These benefits were then weighed against the costs associated with construction, preliminary engineering, construction engineering, as well as contingencies to determine the overall feasibility of the study.

Findings: Construction of a four-lane divided highway was found to be warranted only in the southern section of the corridor (Allisonville Road to SR 213). The remaining segments were found to be functioning without the need for additional travel lanes, and therefore, the construction of additional lanes was not recommended. Only minor planned improvements were suggested north of SR 213.

Corridor Improvement Study prepared by the SR 37 Highway Task Force

Year Performed: 1994

Reason for Study: To study the feasibility of upgrading an existing two-lane facility into a four-lane limited access thoroughfare.

Study Limits: From north of Noblesville (Strawtown) to Marion.

Method: The study analyzed ADT volume counts, accident data, and development trends within the corridor boundaries to determine the feasibility of upgrading SR 37.

Findings: The analysis of traffic counts and accident data verified the need for expansion due to congestion in the southern portion of the corridor. Additionally, the study concluded that growth trends along the corridor are such that the central and northern sections of SR 37 should be upgraded to prevent future construction limitations associated with the progression of development along the corridor.

I-69 / SR 37 Major Investment Study (MIS) prepared by The Corradino Group, Sponsored by INDOT

Year Performed: 1996

Reason for Study: To study possible solutions to highway congestion brought on by rapid growth in northeastern Marion County and southern Hamilton County.

Study Limits: I-465 north leg from SR 431 (Keystone Avenue) east to I-69, I-69 from I-465 north to SR 238, and SR 37 from I-69 north to just beyond SR 213

Method: The study involved local agencies and communities, environmental resources, and a traffic forecasting model in order to determine the best fit alternatives for each section of highway.

Findings: The analysis for SR 37 (within the limits of the current study) found a four-lane divided highway, realigned between Allisonville Road (2.38 miles north of SR 32) and Strawtown Road (1.76 miles south of SR 213) to be the most feasible alternative.

Northeast ConNECTions Major Investment Study prepared by Parsons, Brinckerhoff, Quade & Douglas, Inc. Sponsored by The Indianapolis MPO

Years Performed: 1997-2004

Reason for Study: To study possible solutions to highway congestion brought on by rapid growth in northeastern Marion County and southern Hamilton County.

Study Limits: This study involved the I-69 corridor on the northeast side of Indianapolis. This included SR 37 for its interchange with I-69 to Allisonville Road.

Method: The study involved local agencies and communities, environmental resources, and a comprehensive traffic forecasting model in order to determine the best fit alternatives for each section of highway.

Findings: Both the NE Connections and the SR 37 studies were proceeding concurrently. Based on feedback from planners on the NE Connections study, it was agreed in 2002 to incorporate a 6 – lane expressway on SR 37 south of SR 32 in this study since it complied with the alternatives that were being considered in the NE Connections study.

The Final Environmental Impact Study (FEIS) and Record of Decision (ROD) have been issued. INDOT and FHWA selected alternative “H5” which provides a 6-lane expressway (non-freeway) on SR 37 from I-69 to State Road 32 in Noblesville. This selected alternative will be acknowledged in this study.

Directions Rapid Transit Study (2002)

Year Performed: 2002-Present

Reason for Study: The Regional Rapid Transit Study (RTS), known as “Directions”, is a comprehensive study of rapid transit in the greater Indianapolis area. Directions(http://www6.indygov.org/indympo/rapid_transit/rts.htm) is being prepared by the Indianapolis Regional Transportation Council (IRTC) and will examine rapid transit service for the region and answer the questions raised during the ConNECTions study with respect to transit alternatives.

Study Limits: While the study area is the greater Indianapolis area, the terminus of one of the corridors considered is Noblesville at the southern end of this project.

Method: The Directions study is multi-phased and will determine a preferred system of transit corridors and technologies. Systems of travel corridors that serve the region, and identify prospective rapid transit technologies have been defined. In addition, further definitions and prioritizations to the travel corridors and rapid transit technologies as well as the determination of potential funding sources have been made.

Findings: A two-tiered alternatives analysis, a comprehensive operational analysis for IndyGo, and a financial implementation plan for expected transit funding need is currently underway.

1.2 STUDY AREA TRENDS AND FORECASTS

1.2.1 Population Trends and Forecasts

Recent population trends for the SR 37 study corridor are displayed in **Table 1.2.1**. The region has a total 2000 population of 406,321. Between 1980 and 2000, the region's population has increased steadily by 27.6 percent. The population projection for the study corridor for the year 2025 is about 17 percent higher than the population in 2000. Only two of the four counties, Hamilton and Tipton, experienced positive population growth in the twenty-year period between 1980 and 2000.

Hamilton County's population, which includes Noblesville, was the only county to grow, by over 122 percent, from 82,027 to 182,740 between 1980 and 2000. Hamilton County is projected to continue its growth by about 38 percent between 2000 and 2025. Grant County's population declined between 1980 and 2000 by over 9 percent. Grant County is expected to sustain a small decrease in its population between 2000 and 2025 of about 3 percent. Madison County's population decreased slightly more than 4 percent between 1980 and 2000. Madison County is projected to maintain its population between 2000 and 2025. Tipton County's population increased slightly more than 3 percent between 1980 and 2000. Tipton County is projected to continue its growth by nearly 6 percent between 2000-2025.

The population of the four counties within the study corridor is expected to be 474,769 by the year 2025. This is approximately an increase of 17 percent between 2000 and 2025. Hamilton County is predicted to have a net population increase between 2000 and 2025. The population percentage change in the counties within the study corridor is higher than that of the population growth rate of the state of Indiana and lower than that of the nation as a whole. During the same period, 1980-2000, in which the region had a net population increase of 27.6%, the state population grew 10 percent and the population of the entire nation grew 21 percent. This trend of population increases is expected to continue between 2000 and 2025.

Table 1.2.1
Population Trends and Forecasts
by County, Region, State, and Nation—1980–2025

	1980	1990	Projected			Percent Change	
			2000	2010	2025	1980– 2000	2000– 2025
Grant	80,934	74,169	73,403	72,405	70,578	-9.3%	-3.8%
Hamilton	82,027	108,936	182,740	208,296	253,251	122.8%	38.6%
Madison	139,336	130,669	133,358	133,584	133,120	-4.3%	0.0%
Tipton	16,240	16,140	16,820	17,180	17,820	3.6%	5.9%
Region	318,537	329,914	406,321	431,465	474,769	27.6%	16.8%
Indiana (000's)	5,490	5,544	6,080	6,318	6,645	10.7%	9.3%
Nation (000's)	226,546	248,791	274,520	299,228	336,348	21.2%	22.5%

Note: 2000 data based on population estimates.

Sources: U.S. Bureau of the Census; State and county projections from Indiana University Kelley School of Business, Indiana Business Research Center, <http://www.stats.indiana.edu/web/county/projections/99county-projections.html>.

1.2.2 Development Trends and Forecasts

Development within the SR 37 study area has been focused in recent years almost exclusively in those areas adjacent to SR 37. A few shopping centers have been constructed in communities along the route using a large national retail store as an anchor for complementary retail and service businesses. Outside of these communities, agriculture dominates the activity along SR 37. A very small number of businesses are located along these unincorporated stretches of the road.

In Noblesville, recent commercial, financial and industrial development south of the SR 32/SR 37 intersection is unprecedented. Noblesville is currently planning a mixed-use industrial and commercial park in this southern area along SR 37. Most recently, a German tool-manufacturing company, Index Corp., has decided to relocate its North American headquarters to southern Noblesville along SR 37. This recent surge in development combined with hospital, commercial and office development on SR 32 in western Noblesville has significantly changed the face of this community.

In Elwood, new development along SR 37 has occurred most recently between SR 13 and SR 28. This is where Plastech and ELSA industries are located, as well as a shopping center. Within one mile west of the SR 28 and SR 37 intersection, limited commercial development has occurred on SR 28, including a few restaurants and small stores. Recent economic development efforts have focused on the SR 28 and SR 37 intersection. Here, mixed industrial and commercial activities are being sought.

In Marion, SR 37 terminates by merging into SR 9 at the southern edge of the community just north of the Marion Municipal Airport. A few commercial and financial businesses are located at this terminus. However, all varieties of service, financial, retail, entertainment, and industrial establishments line both sides of the road along SR 9 through Marion.

There are a number of large employers that are not located along SR 37 that have added greatly to the local economy. In Noblesville, one of the largest employers in Hamilton County, Riverview Hospital, is located along SR 32. The hospital is owned by the county and employs over 650 people. Red Gold Inc., one of the country's top tomato product producers, employs over 200 in Elwood and around 350 in Orestes, just outside of Elwood. In western Marion, General Motors employs over 1,600 at its Metal Fabricating Division. On the north side of Marion, Thomson Consumer Electronics employs over 2,400 workers.

1.3 CRASH ANALYSIS

Years of Analysis

The crash analysis used both crash and average annual daily traffic (AADT) information throughout the study limits from the years 1997 to 1999.

Methodology

In order to identify problem areas, the corridor was broken up into 6 segments based on noticeable changes in facility type (i.e. two-lane or four-lane), AADT, and adjacent land use / demographics. **Table 1.3.1** and **Figure 1.3.1** illustrate the segments used for the crash analysis:

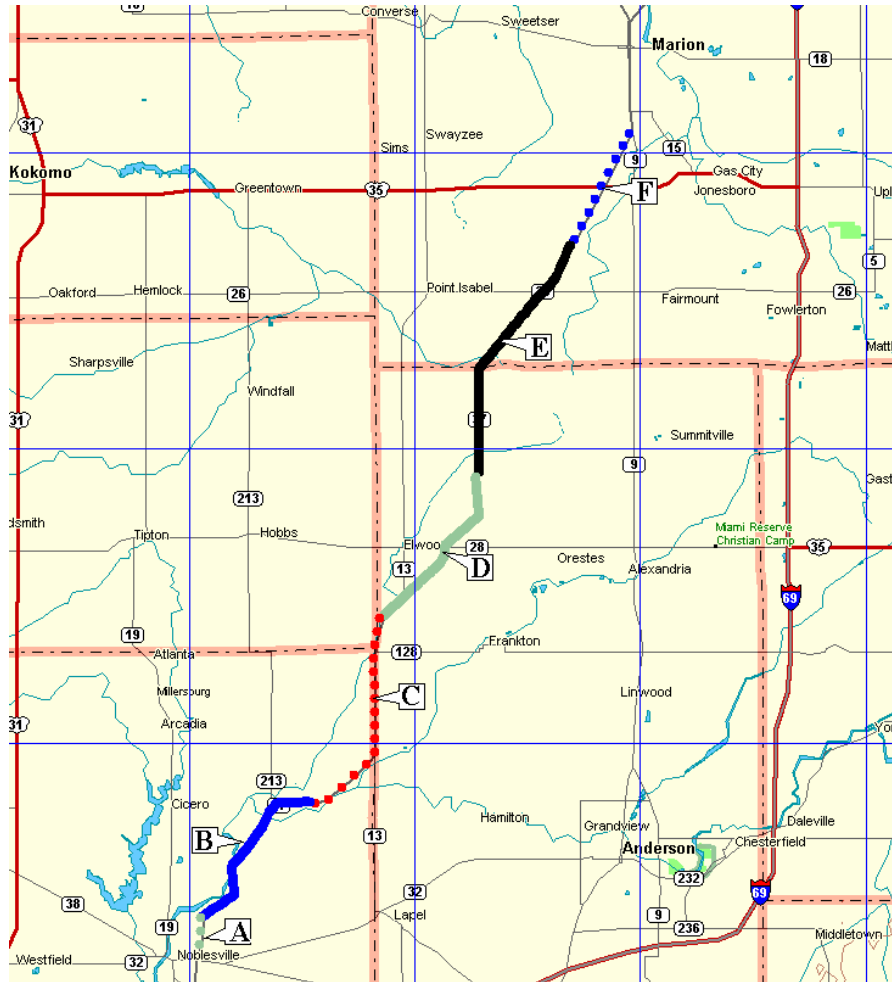
Table 1.3.1
Description of Segments for Crash Analysis

Segment	Description	Length (miles)
A	SR 32/38 to 0.96 mile north of 191st Street (Four-Lane Divided Highway)	3.34
B	0.96 mile north of 191st Street to 1.55 miles north of SR 213	6.81
C	1.55 miles north of SR 213 to 1.85 miles north of SR 128	10.44
D	1.85 miles north of SR 128 to 2.94 miles north of SR 28	7.14
E	2.94 miles north of SR 28 to 1.74 miles north of SR 26	10.30
F	1.74 miles north of SR 26 to SR 9	5.76

Crash rates are measured on the number of crashes per 100 million vehicle miles of travel (VMT). The daily VMT for each segment was found by multiplying the length of each segment by the AADT shown in the INDOT AADT History File Listing. Maximum, minimum, and average VMT were calculated using the various AADT information available within each segment. The daily

VMT was then converted to VMT per year. Since the ADT counts assume weekday flows, which are typically higher than weekend traffic flows, an adjustment must be made when determining the total traffic volume in a given year. In order to compensate for reduced weekend flows, a 6 day week (rather than a 7 day) was utilized in the conversion from VMT to VMT per year. The fatal, injury, and property damage only crash rates were calculated by dividing the number of accidents by the VMT of each segment.

Figure 1.3.1
Map of Segments for Crash Analysis



Source: DeLorme 3-D TopoQuads, 1999

Results

Tables 1.3.2a, 1.3.2b, and 1.3.2c summarize the results of the crash analysis. The rates included in these tables represent the most conservative (highest) crash rates, determined from the lowest AADT for any given section of roadway within a segment.

Table 1.3.2a
Fatal Crash Rates per 100 Million Vehicle Miles of Travel 1997–1999
(1997–1999 Statewide Average for Rural Minor Arterials = 2.03)

Sources: INDOT AADT History File Listing and Crash Reports

Segment	1997	1998	1999	3 Year Avg.
A	0.0	0.0	0.0	0.0
B	0.0	0.0	5.6	1.9
C	0.0	7.3	0.0	2.4
D	0.0	0.0	0.0	0.0
E	0.0	7.3	0.0	2.4
F	0.0	12.5	0.0	4.2
Entire Corridor	0.0	4.5	0.9	1.8


 : Fatal crash rate of exceeds Statewide average.

Table 1.3.2b
Injury Crash Rates per 100 Million Vehicle Miles of Travel 1997–1999
(1997–1999 Statewide Average for Rural Minor Arterials =56.17)

Segment	1997	1998	1999	3 Year Avg.
A	9.6	125.1	80.8	71.8
B	62.7	67.6	61.8	64.0
C	49.1	44.1	44.0	45.7
D	107.7	42.1	120.0	89.9
E	0.0	29.2	65.2	31.5
F	91.6	37.5	94.6	74.5
Entire Corridor	53.4	57.6	77.7	62.9

Sources: INDOT AADT History File Listing and Crash Reports


 : Injury crash rate exceeds Statewide average.

Table 1.3.2c
Prop. Damage Crash Rates per 100 Million Vehicle Miles of Travel 1997–1999
(1997–1999 Statewide Average for Rural Minor Arterials = 164.72)

Segment	1997	1998	1999	3 Year Avg.
A	66.9	95.7	95.5	86.0
B	112.9	107.0	269.7	163.2
C	45.0	40.4	47.6	44.3
D	193.8	168.4	96.0	152.7
E	104.5	7.3	93.2	68.3
F	143.9	174.9	157.6	158.8
Entire Corridor	111.2	98.9	126.6	112.2

Sources: INDOT AADT History File Listing and Crash Reports

The fatal crash rates for segments C, E, and F exceed the statewide average, but no specific trends such as collision type, location, or vehicle action are apparent. Each of the fatalities occurred at different locations and under different conditions.

Segments A, B, D, and F exceed the statewide average for injury crash rates. All of these segments are located in or near the Corporate City Limits of Noblesville, Elwood, or Marion, where major crossroads (potential conflicting vehicular movements) are more prominent. There is no apparent correlation to elevated injury crash rates and type of facility (i.e. two-lane or four lane).

The property damage only crash rates are below the statewide average throughout the entire corridor. As with the injury crash rates, a trend of increased crash rates through higher developed areas (Segment B, D, and F) was noticed. However, the four-lane portion of SR 37 near Noblesville (Segment A) had a much lower property damage only crash rate than the two-lane section

Conclusion

Portions of the corridor exhibit fatality and personal injury crash rates that exceed the statewide averages for this type of facility. However, no specific trends such as collision type, location, or vehicle action are apparent.

1.4 CAPACITY ANALYSIS

Methodology

The capacity analysis for the SR 37 corridor was based on methodologies contained within the 2000 Highway Capacity Manual, Special Report 209 (HCM2000) and the accompanying Highway Capacity Software (HCS2000). The analysis focused on roadway segments and not individual intersections along the corridor.

With the exception of the extreme southern portion of the study area (SR 32 / SR 38 north 2.38 miles to Allisonville Road), SR 37 is a 2-lane facility. The segments investigated are based on those in INDOT's Annual Average Daily Traffic County Flow Maps (broken down by points of a 10 percent change in ADT). The average annual daily traffic (AADT) were based on the most recent traffic coverage counts collected by INDOT. Hamilton County traffic counts were collected in 1998 and Madison and Grant County traffic counts were obtained in 1999. The ADT was extrapolated to 2001 and 2025 levels using growth rates derived from INDOT's traffic history tape. (The history tape is a compilation of actual traffic counts and projections for each segment of roadway under the jurisdiction of INDOT. Through regression analysis, an annual growth rate was derived from the actual traffic counts for each segment.) The SR 37 segment descriptions along with the 2001 base and 2025 horizon year AADT's are presented in **Table 1.4.1**.

Both the morning and afternoon peak hours were determined from the INDOT traffic counts. It was found that the morning peak hour started at 7 a.m. while the afternoon peak hour began at 5 p.m. These patterns correspond well to the commuting nature of the communities along the corridor. The Levels of Service (LOS's) for each segment were assessed for both AM and PM peak periods. The 2001 base and 2025 horizon years LOS's are presented in **Table 1.4.2**.

Table 1.4.1
SR 37 Segment and AADT Summary

Segment Description			2001	2025
Segment Limits	INDOT Segment	County	Estimated AADT	Estimated AADT
SR 32 / SR 38 to 186th Street (4-lane)	4H	Hamilton	21,270	37,020
186th Street to 191st Street (4-lane)	5H	Hamilton	21,200	39,530
191st Street to 216th Street (4-lane)	6H	Hamilton	14,670	26,680
191st Street to 216th Street (2-lane)	6H	Hamilton	14,670	26,680
216th Street to Strawtown Pike	7H	Hamilton	14,080	21,420
Strawtown Pike to SR 213	8H	Hamilton	11,670	19,630
SR 213 to SR 13	9H	Hamilton	8,940	14,820
SR 13 to 281st Street	4D	Hamilton	10,130	17,090
281st Street to Madison County Line	5D	Hamilton	9,640	16,130
Hamilton County Line to CR 1000N	9E	Madison	9,390	14,030
CR 1000N to SR 13	10E	Madison	7,395	13,325
SR 13 to South P Street	1K	Madison	5,460	7,630
South P Street to SR 28	2K	Madison	7,620	11,050
SR 28 to Grant County Line	3K	Madison	4,420	5,480
Madison County Line to SR 26	1M	Grant	3,440	4,650
SR 26 to SR 22 / US 35	2M	Grant	3,620	5,010
SR 22 / US 35 to 50th Street	3M	Grant	4,550	5,260
50th Street to SR 9	4M	Grant	5,640	6,510

Table 1.4.2
Capacity Analysis Summary for SR 37

Segment Description	INDOT Segment	Base Free Flow Speed (mph)	Percent No Passing Zones	2001 LOS*	2025 LOS*
SR 32 / SR 38 to 186th Street (4-lane)	4H	60	4-Lane	B/B	C/C
186th Street to 191st Street (4-lane)	5H	60	4-Lane	B/B	C/D
191st Street to 216th Street (4-lane)	6H	60	4-Lane	A/A	B/B
191st Street to 216th Street (2-lane)	6H	60	100	D/D	E/F
216th Street to Strawtown Pike	7H	60	50	D/D	E/E
Strawtown Pike to SR 213	8H	50	100	E/E	E/E
SR 213 to SR 13	9H	60	50	C/C	D/D
SR 13 to 281st Street	4D	60	10	C/C	D/D
281st Street to Madison County Line	5D	60	10	C/C	D/D
Hamilton County Line to CR 1000N	9E	60	50	C/D	D/D
CR 1000N to SR 13	10E	60	50	D/E	D/F
SR 13 to South P Street	1K	50	100	D/E	E/E
South P Street to SR 28	2K	50	100	E/E	E/E
SR 28 to Grant County Line	3K	60	10	A/B	B/B
Madison County Line to SR 26	1M	60	10	B/B	B/B
SR 26 to SR 22 / US 35	2M	60	10	B/B	B/B
SR 22 / US 35 to 50th Street	3M	60	10	B/B	B/B
50th Street to SR 9	4M	50	10	D/D	D/D

Assumptions: 12-foot lanes
8-foot shoulders (6-foot shoulders for 4-lane segments)
Peak Hour Factor = 0.90

Shaded LOS: Roadway Segment with LOS Lower than "C"

* : X / X = AM Peak LOS / PM Peak LOS

Results

Base year (2001): SR 37 south of 191st Street, where it is 4-lanes, performed satisfactorily with levels of service (LOS) "C" or above. However, north of 191st Street, where SR 37 is only 2 lanes, the corridor experienced unsatisfactory LOS, below "C". Between 191st Street and SR 213 (Segments 6H, 7H, and 8H), the overall LOS was essentially "D" and "E".

North of SR 213, the LOS's improve to "C" until the Madison/Hamilton County line, where the LOS's begin to deteriorate to "D" and "E" northward to Elwood. In the areas near CR 1000 North and SR 28 (Segments 9E, 10E, 1K, and 2K), the LOS's decline to unsatisfactory levels due high traffic volumes during the AM and PM peak periods which correspond to the commuting and working environment of the Elwood area. In addition, segments 1K and 2K were analyzed with the free-flow speed estimated to be 50 miles per hour. This is lower than the free flow speed of 60 mph used for the majority of the SR 37 corridor, due to the reduced posted speed through Elwood.

North of the SR 28 intersection in Elwood, the LOS improve significantly to “A” and “B.” This is basically due to the relatively low daily and peak period traffic volumes encountered.

2025: The existing SR 37 roadway network with 2025 traffic demand has results that pattern after the 2001 scenario but with lower levels of service throughout the corridor. Favorable LOS (“C” or higher) were found in the south portion of the corridor where SR 37 is presently 4-laned (segment 5H PM peak hour being an exception) and in segments north of SR 28 from Elwood to Marion. Overall, the 2025 LOS basically deteriorates to the next lower service level found in the 2001 scenario, especially south of SR 28.

The LOS for two-lane roads, as outlined in the methodology of the HCM2000, is controlled by what is known as the “Average Travel Speed” and the “Percent Time Spent Following.” Average travel speed reflects mobility of a two-lane highway. It is defined as the length of the roadway segment divided by the average travel time of all vehicles traversing the segment in both directions in designated analysis period such as a peak hour. Percent time spent following represents the freedom to maneuver and the comfort and convenience of travel. It is the average percentage of travel time that vehicles must travel in platoons behind slower vehicles due to the inability to pass.

A sensitivity check was conducted on 2-lane segments for which average travel speed and percent no passing zones could be improved. **Table 1.4.3** displays the changes made to segments and the resulting LOS. The remaining 2-lane segments were not changed since the variables involved were at near favorable settings.

Table 1.4.3
Capacity Analysis Summary for Modified 2 – Lane Segments

Segment Description	INDOT Segment	Base Free Flow Speed (mph)	Percent No Passing Zones	2001 LOS*	2025 LOS*
191st Street to 216th Street	6H	60	25	D/D	E/F
216th Street to Strawtown Pike	7H	60	25	D/D	E/E
Strawtown Pike to SR 213	8H	60	25	D/D	E/E
SR 213 to SR 13	9H	60	25	C/C	D/D
SR 13 to 281st Street	4D	60	10	C/C	D/D
281st Street to Madison County Line	5D	60	10	C/C	D/D
Hamilton County Line to CR 1000N	9E	60	25	C/C	D/D
CR 1000N to SR 13	10E	60	25	C/C	D/D
SR 13 to South P Street	1K	60	25	B/C	C/C
South P Street to SR 28	2K	60	25	D/D	D/E
SR 28 to Grant County Line	3K	60	10	A/B	B/B
Madison County Line to SR 26	1M	60	10	B/B	B/B
SR 26 to SR 22 / US 35	2M	60	10	B/B	B/B
SR 22 / US 35 to 50th Street	3M	60	10	B/B	B/B
50th Street to SR 9	4M	60	10	B/B	B/B

Bold values indicate modified parameters for 2-lane roadway

Assumptions: 12-foot lanes
8-foot shoulders
Peak Hour Factor = 0.90

Shaded LOS : Roadway Segment with LOS Lower than “C”

* : X / X = AM Peak LOS / PM Peak LOS

For the average travel speed, HCS2000 allows a range of 45 to 65 miles per hour. The average travel speed is a result from adjustments made to the base free flow speed; the adjustments are influenced by the number of access points per mile, lane and shoulder width, and the percent no passing zones. Most of the SR 37 corridor within the study limits is posted with a 55 mile per hour limit. In these segments, a 60 mile per hour base free flow speed was used in the analysis since most motorists travel at least higher than the posted limit. However, in other segments of the study area, such as in the vicinity of Strawtown, Elwood and Marion, 45 mile per hour speed limits exist. A 50 mile per hour base free flow speed was used in these areas. This reduction in analysis speed directly effected the outcome of the LOS; as much as a one to two LOS grade reduction was observed as displayed in **Tables 1.4.2** and **1.4.3**. Of all variables used as input for the capacity analysis, the average travel speed was the most sensitive since it is directly influenced to the LOS determination.

Another variable that was sensitive to the final LOS determination was the percent of no passing zones. If the percentage of no passing zones increased, the “percent time spent following” parameter would also increase. This would directly influence the deterioration of the LOS. In some segments such as 9E, 10E, 1K, 2K in Elwood as well as 4M in Marion, the reduction of no passing zones helped to improve LOS. On other segments at the southern end of the study area (6H, 7H,

8H, and 9H), the reduction of no passing zones did not help reduce LOS since the existing peak hour volumes were relatively high. These high volumes and associated service flow rates were more critical in influencing “percent time spend following” and hence, LOS.

In addition, the peak hour factor (PHF) was another input variable that could influence LOS determination. In this analysis, a PHF of 0.90 was used. It was used as a default and represents a reasonable and realistic factor for a corridor that traverses urban, suburban, and rural areas. It was observed that in some cases, the LOS would deteriorate if the PHF went below 0.85.

Other input variables such as lane width, shoulder width, percentage of trucks/buses/recreational vehicles and access point density did not prove to be as sensitive in determining the final LOS. The average travel speed, the percentage no passing zones and the existing peak hour traffic volumes had more of a controlling influence.

Conclusion

Currently, several segments of the existing SR 37 corridor experience unacceptable levels of service. Segments between 191st Street and SR 213 experience levels of service in the D to E range during peak hours. Additionally, the segments in southern Madison County and from SR 13 (north junction) to SR 28 near Elwood also experience levels of service in the D to E range. All other segments, except for one segment from 50th Street to SR 9 near Marion, have acceptable levels of service ranging from A to C. For the year 2025 traffic projections, all segments between 186th Street and SR 28 experience unacceptable levels of service in the D to F range. North of SR 28, the levels of service are consistently B, except for the 1000-foot segment from 50th Street to SR 9 near Marion, which experiences level of service D. This indicates traffic problems at the intersection of SR 37 and SR 9.

Based on the 2001 and 2025 traffic scenarios, capacity improvements to SR 37 from 191st Street to SR 28 and from 50th Street to SR 9 in Marion would be needed to improve SR 37’s travel efficiency. This could include a range of possibilities through these segments, from standard two-lane cross section elements with enhanced passing opportunity to added through travel lanes.

1.5 PURPOSE AND NEED

The Indiana Department of Transportation (INDOT), in cooperation with the Federal Highway Administration (FHWA), has undertaken this Purpose and Need Statement for the SR 37 Environmental Assessment / Corridor Study in accordance with the following:

- Transportation Equity Act for the 21st Century (enacted June 9, 1998)
- National Environmental Policy Act (NEPA) of 1969
- INDOT’s Streamlined Environmental Impact Statement (EIS) Procedures (approved July 6, 2001)

- FHWA Indiana Division Section 106 (historic) Consultation Procedures (approved August 7, 2001)

Based on the needs identified along this corridor, the purpose and need of the SR 37 study is to define corrective actions that will:

- **Reduce the crash frequency (risk).**
- **Provide a level of service C or better and provide system continuity within the project limits for forecasted traffic volumes for the year 2025.**

This Purpose and Need Statement defines the “need” (deficiencies) for a proposed action by addressing the following questions:

- Why are real or perceived deficiencies a problem and what facts support the existence of the problem?
- Why is the problem occurring here and not somewhere else, and why are we only addressing the problem here?
- Why does the problem need to be addressed now, and what could happen if the problem is not addressed now?

This document then defines a broad corrective action (“purpose”) for each associated “need” by asking:

- What are the requirements?
- When will success be declared?
- What is the best measurement for success?

The SR 37 EA/Corridor Study focuses on the segment of SR 37 from Noblesville to Marion in Hamilton, Tipton, Madison, and Grant Counties. The intersection of SR 37 and SR 32/38 in Noblesville, and the intersection of SR 37 and SR 9 in Marion have been designated as the southern and northern termini, respectively. Each of these intersection routes represent the most significant arterials connected to SR 37 in the vicinities of the two terminus cities. This study will evaluate several alternatives for the corridor, including several highway types, relocated alignments, and the “No-Build” alternative. The result of this EA/Corridor Study may identify multiple projects that satisfy the purpose and need of the project.

1.6 EVALUATION CRITERIA

The SR 37 EA/Corridor Study examines the condition of the existing facility, and appropriate measures and timing to address any deficiencies (needs). This study looks at a variety of route options and highway type alternatives and presents findings on whether or not any of the corridor investments are feasible. Each alternative is evaluated based on its ability to meet the following criteria:

1. Ability to meet the Purpose and Need defined for the study corridor.
2. Ability to satisfy the congressional mandate to study the feasibility of improvements to SR 37 in Noblesville, Elwood, and Marion.
3. Engineering and Cost —Does the alternative include any unusual engineering difficulties, and what would each alternative improvement cost the agency?
4. Environmental —Does the alternative have any fatal flaws, and is mitigation for environmental impacts available?
5. Travel Efficiency —Does the alternative cause sufficient road user benefits to warrant the investment?

Using the above criteria, the alternatives are screened and refined. Those alternatives meeting the above criteria during the evaluation criteria process will be retained for inclusion in either a finalized Environmental Assessment/Corridor Study, or in an Environmental Impact Statement (EIS).

1.7 TYPES OF FACILITIES STUDIED

Several types of facilities are evaluated for the SR 37 corridor. The Alternatives being discussed include one or a combination of the following:

1. “No-build” - Only programmed (“committed”) improvements.
2. 4-Lane Divided Expressway (non-freeway) (Partial limited access, at-grade intersections)
3. 4-Lane Freeway (Fully limited access, over/underpasses, interchanges)
4. 2-Lane Improved (Passing lanes, two-way left turn lanes, etc.)

Typical cross sections of these facilities can be found in the Appendix.

1.8 DEFINING THE “NO-BUILD” OPTION

1.8.1 Existing Highway Plans

INDOT’s 2000-2025 Long Range Plan, adopted in February 2002, lists SR 37 between Indianapolis and Marion as a Regional Corridor. A Regional Corridor is a mid-level facility relative to mobility vs. access, between a Statewide Mobility Corridor and a Local Access Corridor. Such corridors provide mobility within regions of the state, and serve as connections to smaller cities and regions. When evaluating possible improvements to a Regional Corridor, upgrades such as added travel lanes, intersection improvements, turning lanes, grade separations, and modifications to meet design standards should be evaluated. In areas where right of way is restricted and or in urban areas where there are capacity problems, a bypass option can be considered as part of an alternative.

Several improvement projects along or adjacent to SR 37 have already been programmed in INDOT’s 2000-2025 Long Range Plan (<http://www.state.in.us/dot/pubs/longrange/index.html>) and / or are programmed in the local Metropolitan Planning Organizations (MPO’s) Long Range Plans. **Table 1.8.1** outlines the committed projects. These improvements are incorporated in the “No-Build” alternative, against which all other alternatives are compared.

Table 1.8.1
Summary of INDOT Programmed Improvements

County	Location	Planned Improvement	Des. No.	Status
Hamilton	From 2.38 miles N SR 32/38 to SR 28	Resurface (Non-3R/4R Standards)	0100220	RFL: 7/10/01 LET: 10/16/01
Hamilton	From 2.38 miles N of SR 32 to 3.46 miles N of SR 32	Added Travel Lanes	9133575	RFL: NA LET: NA
Hamilton	From 2.38 miles north of SR 32/38 to SR 28	Pavement Rehab. (3R/4R Standards)	9610170	RFL: 12/20/05 LET: 3/25/06
Hamilton	From I-69 N 10.69 miles to Allisonville Road	Added Travel Lanes	9706360	RFL: NA* LET: NA*
Hamilton	From 3.21 miles N of SR 32 to 4.83 miles N of SR 32	Road Construction	9803010	RFL: NA LET: NA
Hamilton	At 206th Street Intersection	Intersection Improvements w/ added Turn Lanes	8913385	RFL: 7/15/02 LET: 10/25/02
Hamilton	At 206th Street Intersection	New Signal Installation	981338A	RFL: 7/15/02 LET: 10/25/02
Madison	From SR 28 to SR 26	Pavement Rehabilitation (3R/4R Standards)	9706580	RFL: 10/25/03 LET: 1/25/04
Madison	Bridge over Big Duck Creek	Bridge Rehabilitation and Repair	9906581	RFL: 10/25/03 LET: 1/25/04
Madison	From SR 28 to SR 26	Sign Modernization	990658X	RFL: 10/25/03 LET: 1/25/04
Madison	At SR 28 Intersection	Traffic Signals Modernization	990658A	RFL: 10/25/03 LET: 1/25/04
Grant	At SR 26 Intersection	Flashers, Modernize	990658B	RFL 10/25/03 LET: 1/25/04

RFL – “Ready for Letting” Date

LET – “Letting” Date

* – Improvements compatible with the FEIS of the NE Connections Study prepared for INDOT

The Pavement Rehabilitation project from SR 28 to SR 26 is included on the Madison County Council of Governments’ (MCCOG’s) 2001-2003 Transportation Improvement Program TIP (<http://www.mccog.net/pdf/tipmap.pdf>). Part 5 (Unfunded Rural Projects) in Appendix C of the Indianapolis MPO’s Year 2025 Regional Transportation Plan (<http://www6.indygov.org/indympo/index.htm>) also includes a roadway widening project (Widen 2-lane to 4-lane) on SR 37 from SR 213 to SR 13.

1.8.2 “No-Build” Alternative

Each of the improvements listed in **Table 1.8.1** are incorporated into the “No-Build” Alternative, defined as the existing roadway plus committed improvements. Many of the projects should help remedy deficiencies along portions of the corridor, and must be considered as an existing condition when comparing the “No-Build” to each of the alternatives. The designs of the pavement rehabilitation and intersection improvement projects typically incorporate upgrading the horizontal alignment, vertical alignment, and intersection sight distances to meet current design standards where feasible. Therefore, existing sight distance and curvature deficiencies at the 206th Street intersection, and along the sections of roadway from Allisonville Road to SR 28 and from SR 28 to SR 26 are likely to be addressed during the design of these projects. However, due to the uncertainty of such improvements, the “No-Build” Alternative assumes that such deficiencies will not be remedied with the pavement rehabilitation projects. Based on feedback from planners on the NE Connections study, it was agreed to incorporate a 6 – lane expressway on SR 37 south of SR 32 and lane additions on I-69, I-70 and I-465 since these complied with the alternatives that were being considered in for the NE Connections study in 2002. The projects without a set “Ready for Letting” or “Letting” date north of SR 32 are also ignored for the purpose of determining the “No-Build” option, since the future of these improvements is unclear.

2.0 CORRIDOR OPTIONS

2.1 ALTERNATIVES CONSIDERED

The following is a description of each alternative considered in this study. Along with the “No-Build” and previous studied improvement alternatives, several new alternatives / combinations are described. Each of these alternatives was subjected to the initial Stage 1 screening process. Some alternatives were dismissed in the process for not adequately addressing the study’s purpose and need. The remaining alternatives proceeded to a more detailed evaluation.

Transit is not considered as an exclusive alternative for this study. A corridor in question must meet certain criteria for a transit system to be a viable and cost effective alternative. Chapter 30 of the Highway Capacity Manual 2000 states that an area must first be found to be transit-supportive in order for it to become a viable alternative. More specifically, a transportation analysis zone (TAZ) must have a household density of 3 units/gross acre or a job density of 4 jobs/gross acre to be considered transit-supportive. Based on these requirements the three major communities along SR 37 (Noblesville, Elwood, and Marion) are not transit-supportive, and populations based on forecasted growth trends do not appear to support such a transportation mode the future. In addition, INDOT’s Long Range Plan lists only 2 transit systems are in SR 37 study area. One is the City of Marion Public Transportation System. It is a 2nd peer group public transit agency, operating less than 1 million total vehicle-miles per year. Over 50 % of these total miles operate on a fixed route service. The second transit service in the study area is the Transportation for Rural Areas of

Madison (TRAM). This is a 4th peer group transit agency with more than 50% of its operations being demand responsive. The only other transit service is IndyGo, which serves Marion County south of the study area. Lastly, the regional study corridors in the Directions study only include SR 37 south of SR 32 in Noblesville. North of SR 32, SR 37 is not included in the Directions study. In fact, SR 19 north of Noblesville to Cicero and Arcadia and SR 32 east to Anderson are identified as regional study corridors. Both commuter rail and light rail are considered to serve Noblesville from the south. North (SR 19) and east (SR 32) of Noblesville, bus service is considered in the alternatives. Hence, the Directions Study did not identify SR 37 north of Noblesville as a regional study corridor.

Based on the sparse land use in the study area, the absence of existing transit systems and the omission of SR 37 as a regional study corridor by the Directions study, transit is not considered as an exclusive alternative for this study. The ridership of such a transit system would likely be very low and negligible. It would therefore not meet the purpose and need as far as reductions in accidents and improved levels of service are concerned.

The following highway alternatives are evaluated:

Alternative No. 1

“No-Build” Alternative: Existing plus programmed / committed improvements.

The No-Build alternative, as illustrated in **Figure 2.1.1** consists of improvements that are already planned and programmed in INDOT’s transportation project development program. This list of projects primarily consists of intersection and signal improvements, pavement rehabilitation, and bridge rehabilitation. These improvements are scheduled to take place over the next five years. The “No Build” aspect to this scenario relates to the fact that no new improvements would emerge from this study as a recommendation to proceed through INDOT’s project development process.

This no-build alternative serves as a baseline for comparing impacts of the other alternatives.

Alternative No. 2

Improved 2-Lane Highway from Noblesville to Marion on (or near) existing alignment.

This alternative consists of roadway and intersection improvements to the existing SR 37 and is illustrated in **Figure 2.1.2**. SR 37 would remain a two-lane highway for the entire corridor. However, spot improvements such as passing lanes, left-turn lanes, and intersection improvements, would be proposed that address roadway deficiencies and result in an overall better two-lane facility than the existing SR 37. Additionally, a part of the evaluation process for this alternative explores the potential for purchasing limited access right-of-way for safety and capacity purposes.

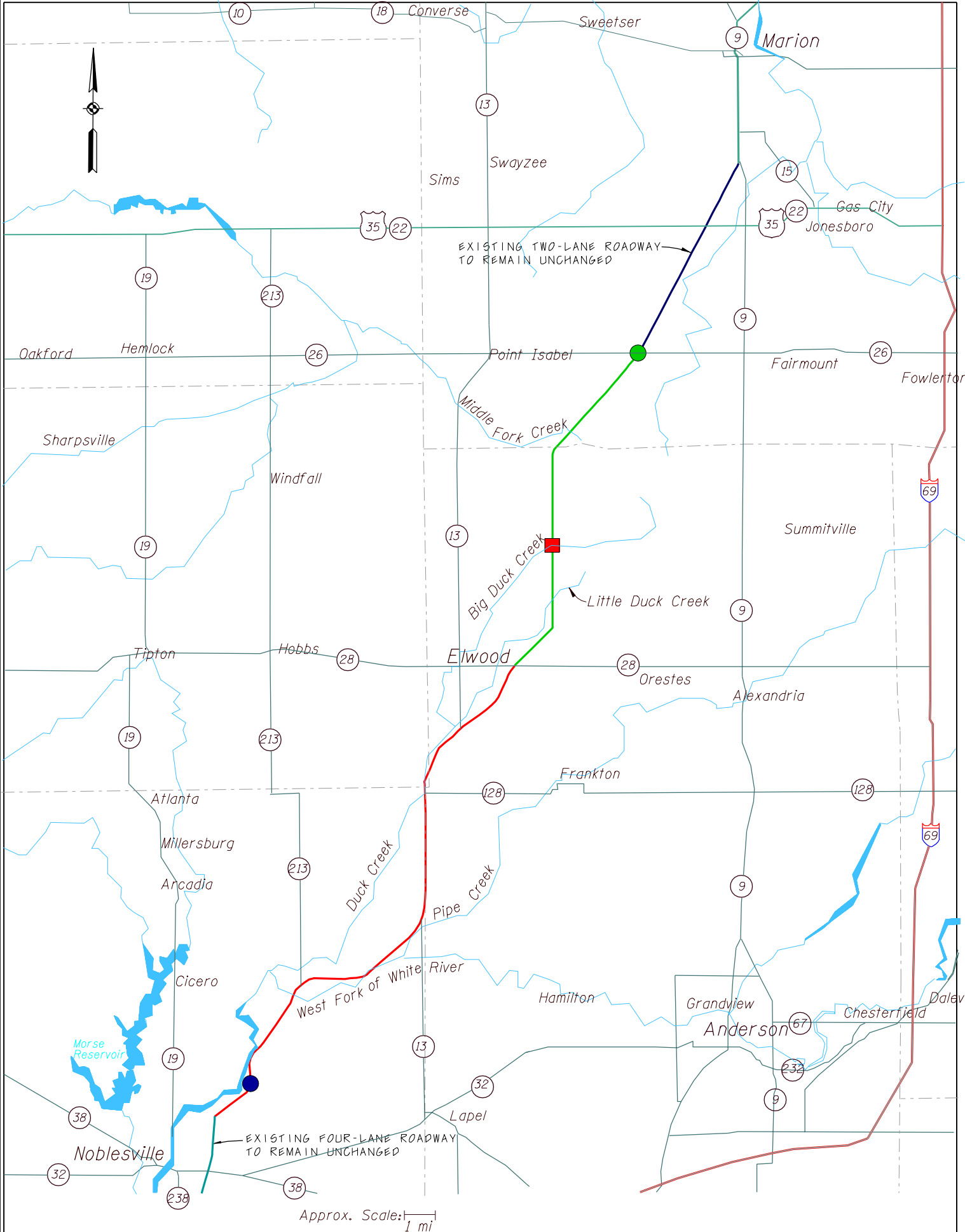
Alternative No. 3

4-Lane Expressway (non-freeway) from Noblesville to Marion.

3a. Original Alignment

3b. New Alignments at Strawtown and Elwood

This alternative improves SR 37 to a four-lane divided highway with partial access control, using limited access right-of-way with direct access limited to at-grade intersections with select public roads, thus creating an expressway (non-freeway) type facility. New alignments near Strawtown and Elwood are also evaluated for this alternative. Alternative 3 is illustrated in **Figure 2.1.3**.

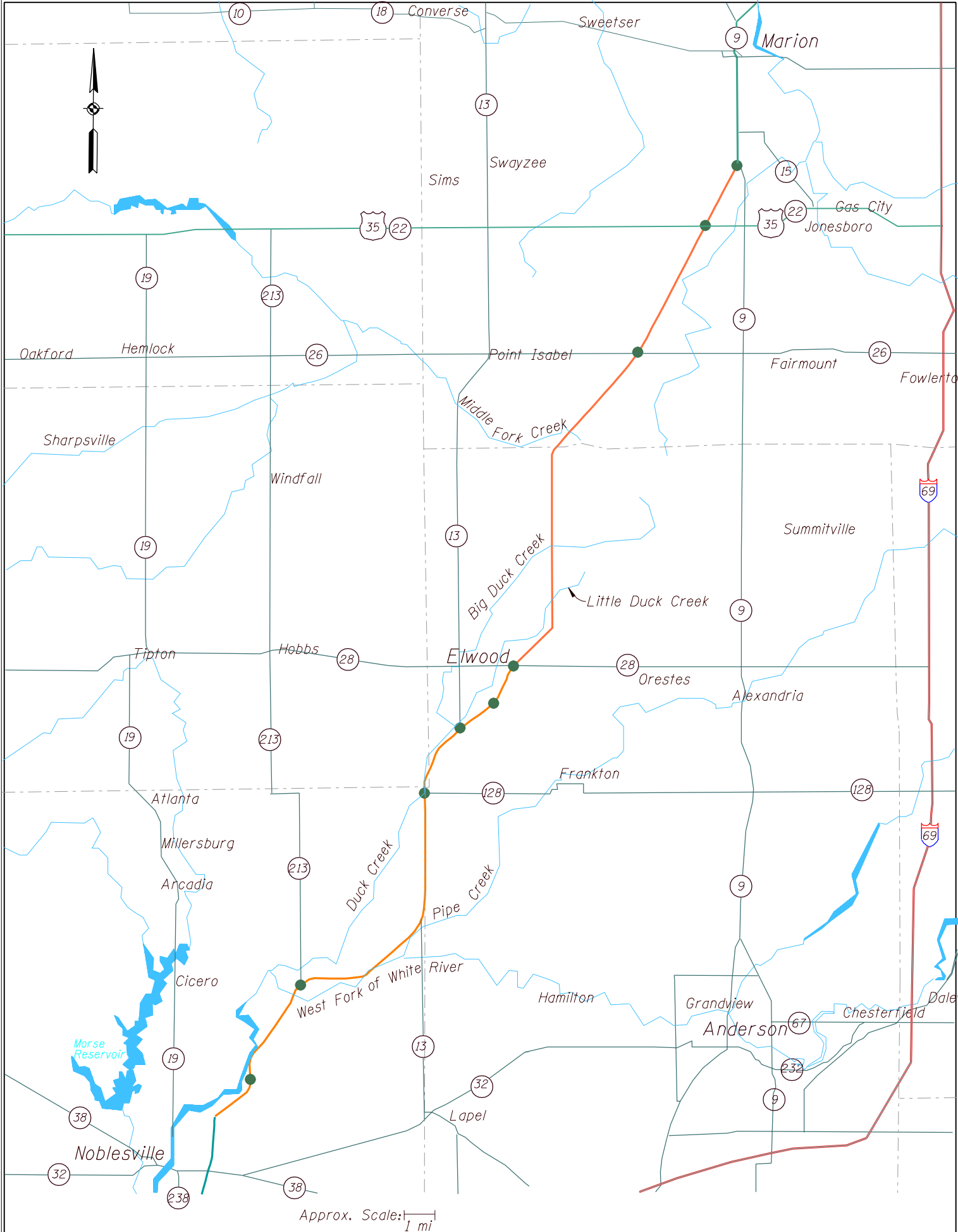


SR 37 EA / Corridor Study

Figure 2.1.1

Alternative No. 1 - "No-Build"





SR 37 EA / Corridor Study

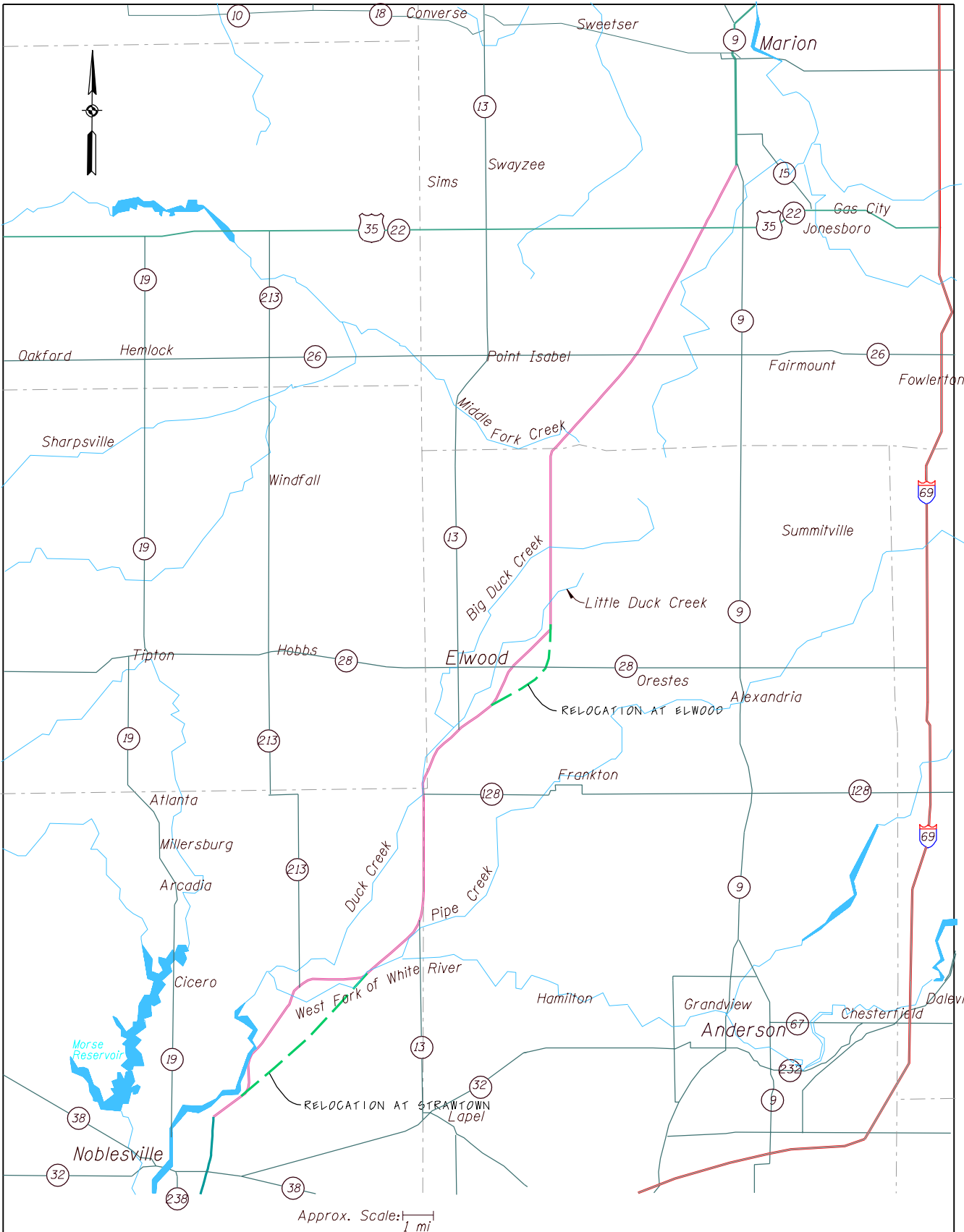
Figure 2.1.2
Alternative No. 2

IMPROVED 2-LANE HIGHWAY

— POTENTIAL PASSING LANES
& TWO-WAY LEFT TURN LANES

● POTENTIAL INTERSECTION IMPROVEMENTS





SR 37 EA / Corridor Study

Figure 2.1.3
Alternative No. 3

— 4-LANE EXPRESSWAY *NON-FREEWAY*
PARTIAL LIMITED ACCESS, AT-GRADE INTERSECTIONS
- - - POTENTIAL ROADWAY RELOCATIONS



Alternative No. 4

4-Lane Freeway from Noblesville to Marion.

4a. Original Alignment

4b. New Alignments at Strawtown and Elwood

This alternative entails improving SR 37 to a limited-access, fully controlled four-lane freeway, as illustrated in **Figure 2.1.4**. Access to the freeway would be limited to interchanges. All other crossroads having existing intersections with SR 37 will be terminated or provided simple grade separations (bridge over or under SR 37). The highway will follow the existing alignment where possible, but new alignments near Strawtown and Elwood are also evaluated for this alternative.

Alternative No. 5

4-Lane Divided Expressway (non-freeway) to Elwood, Improved 2-Lane Highway from Elwood to Marion

5a. Original Alignment

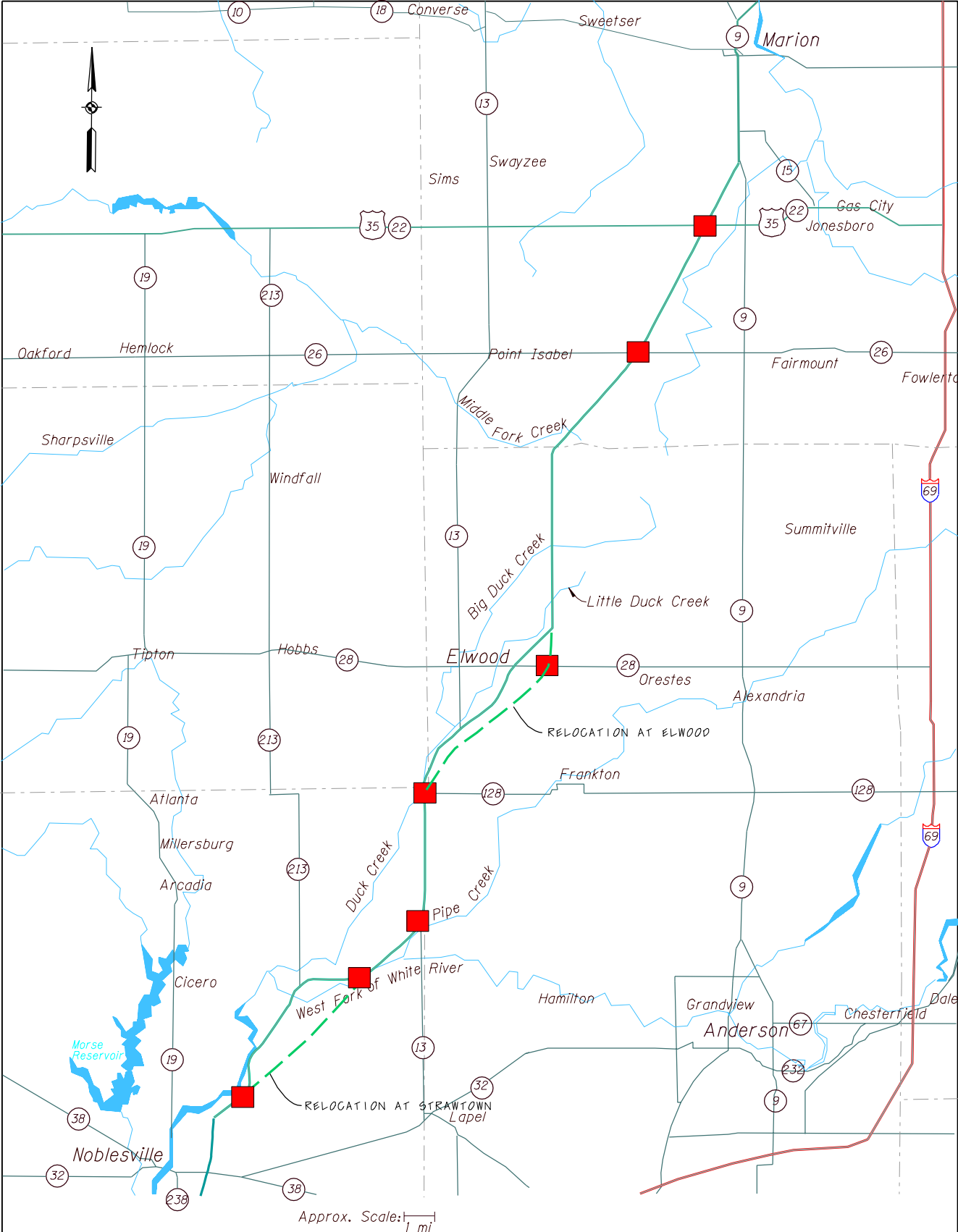
5b. New Alignment at Strawtown and Elwood

Alternative 5, as illustrated in **Figure 2.1.5**, is a variation of Alternative 3 in that it involves upgrading SR 37 to a 4-Lane divided Expressway (non-freeway) between Noblesville and Elwood. However, Alternative 5 differs from Alternative 3 between Elwood and Marion, as it consists of an improved two-lane highway, similar to Alternative 2. Similarly to Alternative 2, a part of the evaluation process for the 2-Lane portion of this alternative explores the potential for purchasing limited access right-of-way for future corridor widening / expansion. New alignments near Strawtown and Elwood are also evaluated.

Alternative No. 6

4-Lane Divided Expressway (non-freeway) to 213, “No-Build” north to Marion.

This alternative is a hybrid of Alternatives 1 and 3, and is illustrated in **Figure 2.1.6**. The existing four-lane expressway (non-freeway) would be extended from Noblesville to SR 213. From SR 213 to Marion, this alternative consists of roadway and intersection improvements that are already planned or programmed, the same as the “No Build” alternative.

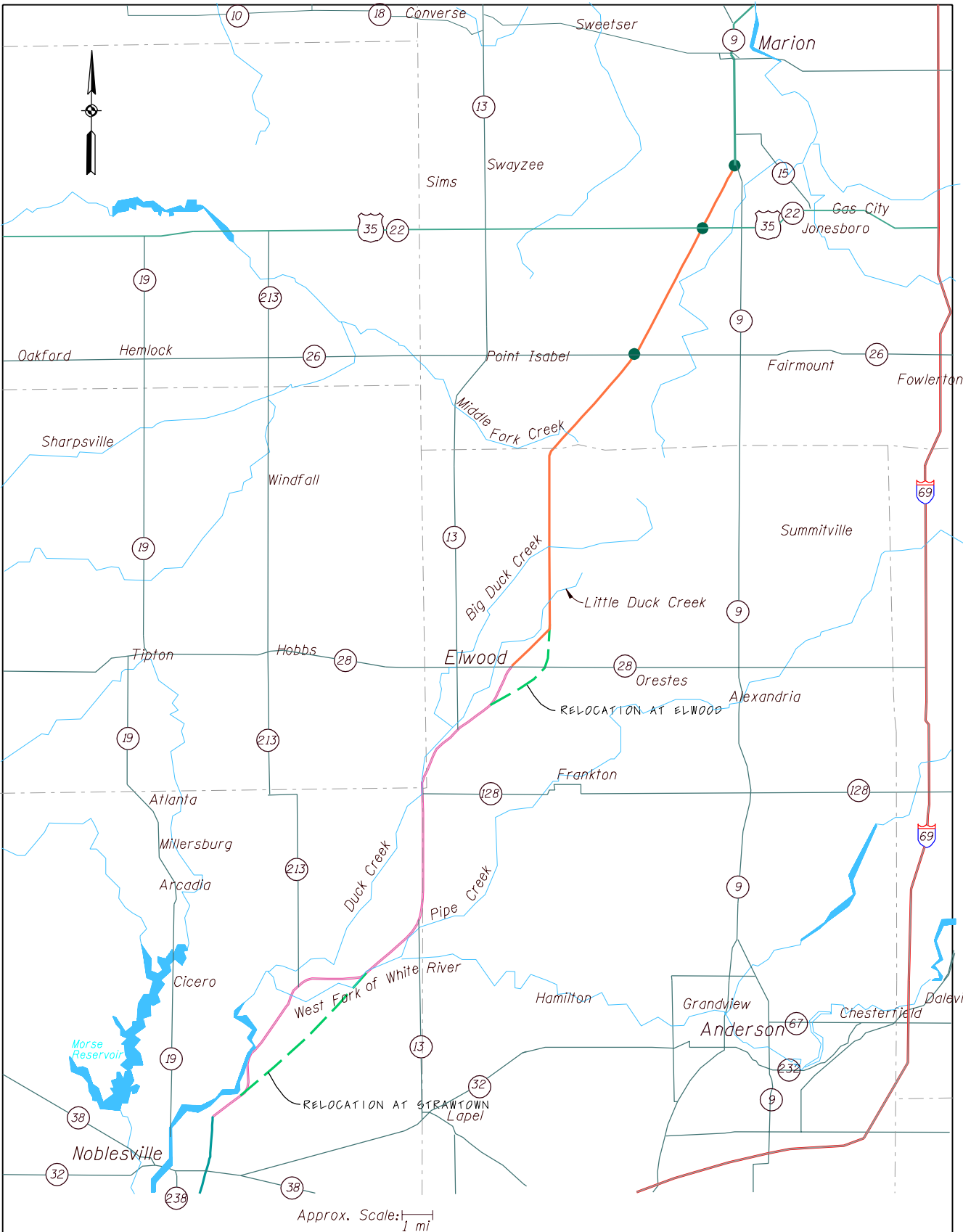


SR 37 EA / Corridor Study

Figure 2.1.4
Alternative No. 4

- 4-LANE FREEWAY
FULLY LIMITED ACCESS, OVER/UNDERPASSES, INTERCHANGES
- POTENTIAL ROADWAY RELOCATIONS
- POSSIBLE INTERCHANGE



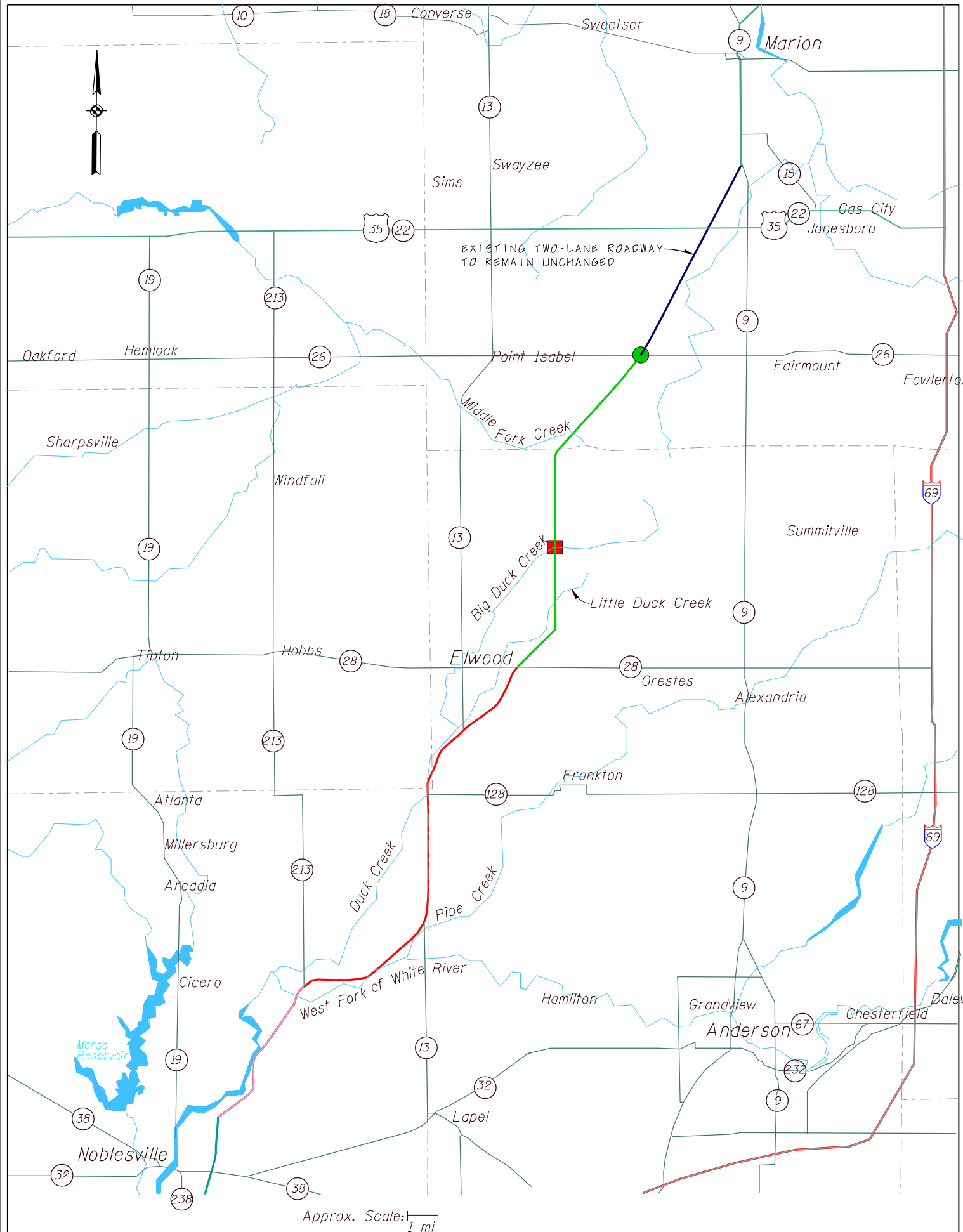


SR 37 EA / Corridor Study

Figure 2.1.5
Alternative No. 5

- 4-LANE DIVIDED EXPRESSWAY *NON-FREEWAY*
- IMPROVED 2-LANE HIGHWAY
- POTENTIAL ROADWAY RELOCATIONS
- POTENTIAL INTERSECTION IMPROVEMENTS





SR 37 EA / Corridor Study

Figure 2.1.6
Alternative No. 6

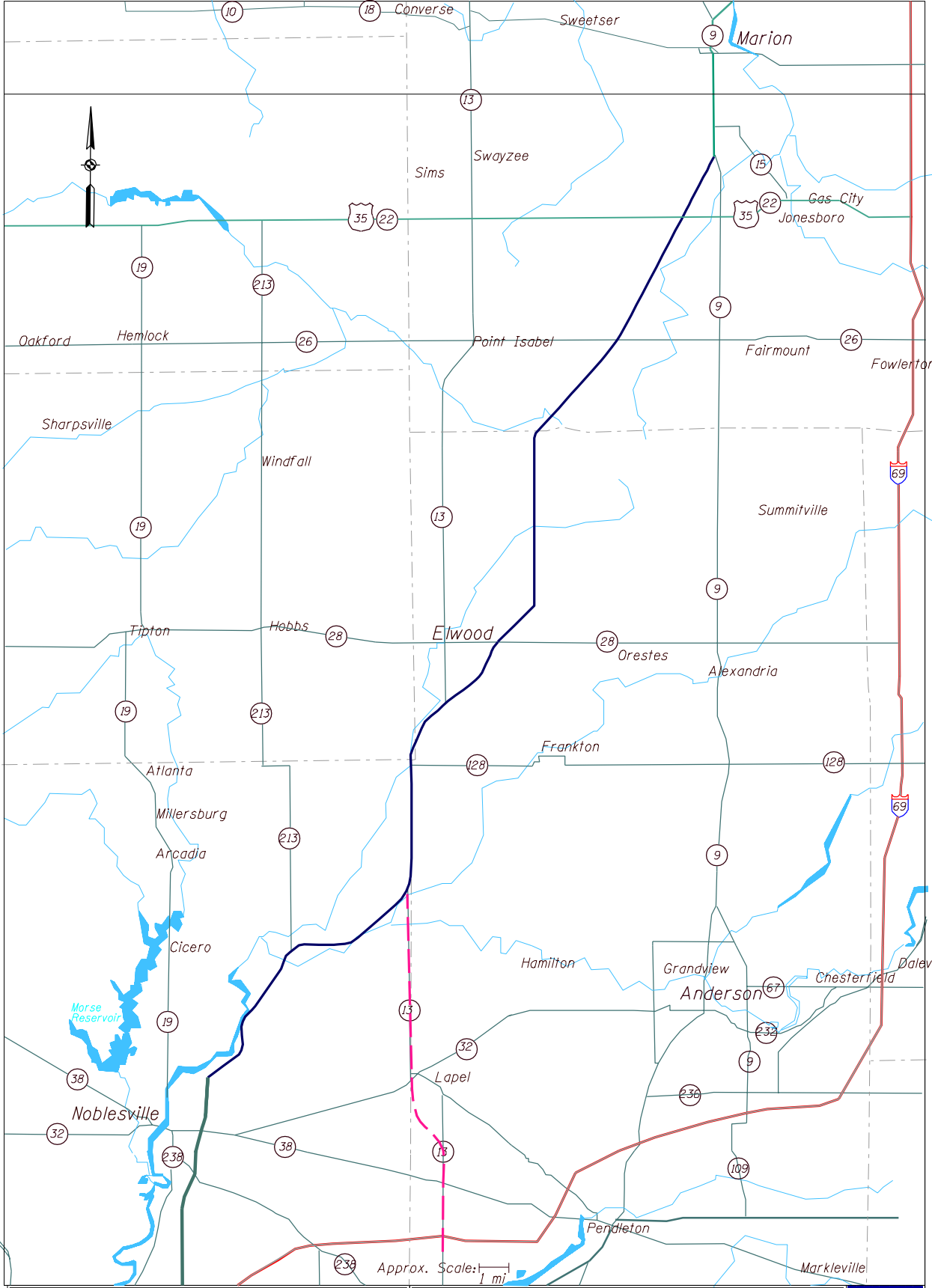
- 4-LANE EXPRESSWAY *NON-FREEWAY* FROM NOBLESVILLE TO SR 213, "NO-BUILD" FROM SR 213 TO MARION
- 4-LANE EXPRESSWAY
- 2006 PAVEMENT REHABILITATION
- 2004 PAVEMENT REHABILITATION & SIGN MODERNIZATION
- 2004 FLASHERS MODERNIZATION
- 2004 BRIDGE REHABILITATION & REPAIR



Alternative No. 7

SR 13 Improvements from SR 37 (South Junction) south to I-69

This alternative was suggested by the Stakeholders Committee at a meeting on July 24, 2001, and involves improving the existing two-lanes of SR 13 southward from the south junction of SR 37 and SR 13 as shown in **Figure 2.1.7**. SR 13 would become the new route for SR 37, being realigned around the west side of Lapel. It would eventually join the existing SR 13 alignment just north of I-69. This could serve to divert traffic from “Old” SR 37, particularly between Noblesville and I-69. This alternative is evaluated in conjunction with other alternatives, namely those with a four-lane option north of SR 13. Alternative 7A consists of a 4-lane expressway on SR 37 north of the SR 13 junction to Elwood. Alternative 7B is similar to Alternative 7A, but the 4-lane expressway traverses through Elwood to Marion.



SR 37 EA / Corridor Study

Figure 2.1.7
Alternative No. 7

SR 37 REALIGNMENT
FROM SR 13 SOUTH TO I-69

— PROPOSED ROADWAY ALIGNMENT



Members of the Stakeholders Committee stated that the study area boundary should include the two-lane portion SR 9 north of Marion. Committee members stated that during peak season, large campers and RV's tend to create congestion along this two-lane stretch because there is no opportunity for safe passing. However, this recommendation is beyond the scope of this study. The intent of the Congressional mandate requiring this study is to examine the feasibility of roadway improvements on SR 37 in Noblesville, Elwood, and Marion. INDOT representatives from the Ft. Wayne District have stated that the district is aware of the concerns, and plans to evaluate the section of SR 9 north of Marion.

3.0 SCREENING OF THE ALTERNATIVES

The purpose of the screening is to identify which alternatives have fundamental engineering, safety, or environmental flaws, or do not meet the purpose and need, or do not satisfy the Congressional mandate of the study. Those alternatives that do not meet these criteria are not considered further in this study. The best of remaining alternatives are retained for further evaluation in a finalized EA/Corridor Study, or in an Environmental Impact Statement (EIS). The no-build alternative serves as a baseline for comparing impacts of the other alternatives. Below is a description of each screening criteria and the methodology used to rank the alternatives. The criteria are rated on a scale of zero to 10, with 10 being the most undesirable. The screening calculations can be found in the Appendix.

3.1 PURPOSE AND NEED SCREENING CRITERIA

These screening criteria are based on the purpose and need statement for this study as stated in Section 1.0 of this report.

Reduce Crash Frequency (Risk)

The reduction of crash frequency is one of the primary purpose and needs of the project. The improved roadway cross-sections and access control features would yield reduced accident rates based on INDOT's accident rates for fatality, injury, and property damage crashes for 1998. The crash frequencies for each alternative are calculated by multiplying the Vehicle Miles of Travel (VMT) generated by the travel demand model by the INDOT crash rates for the appropriate roadway functional classification. The no-build traffic volumes are applied to the each alternative to make the comparison relative. The weighting scale is based on the reduction in accident frequency relative to the no-build scenario (Alternative No.1). The INDOT accident rates and crash frequencies for each alternative are presented in the Appendix.

Provide LOS C or Better in 2025

The favorable level of service of SR 37 in the year 2025 is the second important purpose and need screening criterion. The capacity analysis is based on travel assignments from the travel demand model as well as peak hour travel patterns recorded in the most recent traffic counts. The Indiana travel demand model assigns daily traffic volumes to the roadway network. Specifically, it breaks down the traffic volumes to AM Peak Period, PM Peak Period, and Off Peak Period. The peak periods, as defined by the model, are 3-hour periods in the morning and afternoon; the model does not simulate a true peak hour. If the peak periods are divided by three, the resulting peak hour estimate is approximately 9 percent of the assigned volumes. Comparing the peak hours identified in the actual traffic counts collected by INDOT in the late 1990's, it was discovered that the afternoon peak hour volumes are approximately 8 to 9 percent of the total volumes. Since the travel demand model does not provide detailed peak hour traffic volumes, as well as directional split during the peak hour, these parameters are derived from the actual traffic counts. This derivation of the peak hour is reasonable and appropriate given the land use and prevailing travel patterns along the corridor. Past experience has shown that the peak hour percentages and directional distributions can be rather consistent, especially when there are no conspicuous changes in land use type and prevailing travel patterns. Such is the case with the SR 37 corridor. Given that the capacity analysis relies on the output from the travel demand model, that the model is macroscopic in nature, and given the sensitivity of such capacity parameters as the peak hour factor and directional distribution, borderline levels of service are identified for various segments. In such cases, the more favorable level of service is recognized in the screening analysis.

The capacity analysis is based on methodologies outlined in the Highway Capacity Manual 2000. The results of the analysis for the year 2025 reveal unfavorable levels of service (LOS D, or worse) on alternatives that include two-lane segments of SR 37. From **Table 3.1.1**, it can be seen that Alternatives No. 1, 2, 6, 7A and 7B experience LOS D or worse. Most of the segments experience LOS D, with a few segments having LOS E. Alternative No. 5 experiences favorable levels of service (A or B) south of Elwood, and has acceptable levels of service (low C) north of Elwood. In contrast, the 4-lane expressway and freeway alternatives (Nos. 3 and 4), have LOS's that are very favorable, typically A or B. Contributing factors to this is the commuting nature of the SR 37 corridor. The peak hour percentages recorded in recent traffic counts were relatively high. This is indicative in a commuting route where there are major employment centers in the study area. In addition, the directional distribution, as observed in the recent traffic counts, is skewed to as high as 59/41 percent. This, coupled with the high peak hour percentages and a conservative peak hour factor of 0.90, results in poor LOS's for most two-lane alternatives. While the LOS's for two-lane alternatives are unfavorable, most are in the low-to-middle LOS D range. The parameter controlling the LOS on Two-Lane Roadways is Percent Time Spent Following. The range for LOS D for percent time spent following is between 65-80%. It can be seen in Table 3.1.1 that many of the two-lane segments, especially those north of SR 28, were just crossing into the LOS "D" range (mid- to upper 60 percent). This indicates that the generated traffic volumes for the alternatives were just beginning to fail for two-lane roadways in the 2025 horizon year.

The levels of service for most of the four-lane alternatives are in the A to B range. The very favorable LOS's, measured in lane density (passenger car/mile/lane) for the four-lane segments indicate a roadway that is well under capacity in the 2025 horizon year.

The screening analysis was based on the following ranking. For alternatives having a LOS of C or higher, a ranking of 1.0 was given. For alternatives having an LOS of D, a ranking of 5.0 was given. For alternatives having an LOS of E or F, a ranking of 10.0 was given.

Table 3.1.1 Summary of Capacity Analysis for SR 37 – PM Peak Hour, 2025

SR 37 Segment	1	2	3A	3B	4A	4B	5A	5B	6	7A	7B
SR 9 to SR 22	911 62.5% C	1035 66.6% C/D	1218 (6.6) A	1094 (5.9) A	2094 (9.6) A	1622 (7.4) A	1015 66.0% C/D	1023 66.2% C/D	923 62.9% C	1116 68.8% C/D	1442 (7.8) A
SR 22 to SR 26	1177 70.5% C/D	1293 73.5% C/D	1677 (9.1) A	1371 (7.4) A	3403 (15.5) B	1967 (9.0) A	1277 73.1% C/D	1289 73.4% C/D	1195 71.0% C/D	1357 75.1% C/D	1867 (10.1) A
SR 26 to SR 28	1023 66.5% C/D	1140 69.5% C/D	1513 (8.2) A	1218 (6.6) A	3193 (14.6) B	1710 (7.8) A	1143 69.6% C/D	1156 69.9% C/D	1041 67.0% C/D	1209 71.3% D	1685 (9.1) A
SR 13 to SR 28	742 66.5% E	807 68.3% E	1042 (7.4) A	N/ A A	2906 (14.2) B	N/ A A	928 (6.6) A	N/ A A	778 67.3% E	938 (6.7) A	1171 (8.4) A
Elwood Bypass	N/ A A	N/ A A	N/ A A	936 (5.5) A	N/ A A	1284 (6.3) A	N/ A A	953 (5.6) A	N/ A A	N/ A A	N/ A A
SR 218 to SR 13 (N. Jct.)	1532 82.4% D/E	1570 83.0% D/E	1891 (11.2) B	1979 (11.7) A/B	3718 (18.2) B/C	N/ A A	1809 (10.7) A	1853 (10.9) A	1561 82.9% D/E	1806 10.7% A	1939 (11.5) B
SR 13 (S. Jct.) to SR 218	1341 74.7% D	1380 75.7% D	1700 (10.2) A	1708 (10.3) A	3413 (17.0) B	1863 (9.3) A	1617 (9.6) A	1675 (10.1) A	1387 75.9% D	1557 (9.4) A	1686 (10.1) A

XXX: 2025 PM Peak Hour Traffic Volume

xx.x%: Percent Time Spent Following (Two-Lane Highways)

(xx.x): Lane Density (pc/mi/ln) (Four-lane Expressways and Freeways)

Letter: Level of Service

Table 3.1.1 Summary of Capacity Analysis for SR 37 – PM Peak Hour, 2025 (Continued)

SR 37 Segment	1	2	3A	3B	4A	4B	5A	5B	6	7A	7B
SR 213 to SR 13 (S. Jct.)	845 63.9% C	878 65.1% C/D	1170 (7.0) A	N/ A	2907 (14.5) B	N/ A	1119 (6.7) A	N/ A	910 66.1% C/D	851 67.4% C/D	1024 69.5% C/D
Strawtown Ave. to SR 213	969 73.0% D	1001 73.8% D	1300 (7.8) A	N/ A	3742 (18.6) C	N/ A	1249 (7.5) A	N/ A	1042 (6.3) A	1060 75.2% D	1132 76.5% D
Strawtown Bypass - SR 13	N/ A	N/ A	N/ A	1257 (7.6) A	N/ A	1246 (6.2) A	N/ A	1267 (7.8) A	N/ A	N/ A	N/ A
Strawtown Bypass	N/ A	N/ A	N/ A	1314 (7.9) A	N/ A	1118 (5.6) A	N/ A	1292 (7.8) A	N/ A	N/ A	N/ A
206 th St. to Strawtown	1240 74.5% D	1267 75.1% D	1595 (9.6) A	N/ A	3742 (18.6) C	N/ A	1551 (9.3) A	N/ A	1358 (8.2) A	1319 76.4% D	1385 77.9% D
191 st St. to 206 th St.	1963 (13.3) B	1989 (13.5) B	2307 (15.6) B	2492 (16.9) B	4273 (21.3) C	2548 (12.7) B	2271 (15.4) B	2472 (16.8) B	2093 (14.2) B	2039 (13.8) B	2096 (14.2) B
SR 32 to 191 st St.	3892 (23.4) C	3919 (23.6) C	4194 (25.3) C	4323 (26.1) C/D	4273 (21.3) C	254 (12.7) B	4160 (25.1) C	4303 (26.0) C/D	3984 (23.9) C	3967 (23.8) C	4025 (24.2) C

XXX: 2025 PM Peak Hour Traffic Volume

xx.x%: Percent Time Spent Following (Two-Lane Highways)

(xx.x): Lane Density (pc/mi/ln) (Four-lane Expressways and Freeways)

Letter: Level of Service

Table 3.1.2 Summary of Capacity Analysis Thresholds

LOS	Percent Time Spent Following (Two-lane Highways)	Lane Density (Four-lane Expressways and Freeways)
A	=<35	11 pc/mi/ln
B	>35-50	18 pc/mi/ln
C	>50-65	26 pc/mi/ln
D	>65-80	35 pc/mi/ln
E	>80	40-45 pc/mi/ln

Source: Highway Capacity Manual 2000

3.2 ENVIRONMENTAL SCREENING CRITERIA

These screening criteria take into consideration impacts on natural and man-made features.

Potential for Affected Architectural / Historic Properties

Most of the structures observed along the corridor would not likely be considered to be eligible for inclusion to the National Register of Historic Places. Many structures are less than 50 years in age. Of those that are older than 50 years, many have been modified, including additions. Upon an inspection of the properties listed by Indiana State Historic Preservation Office (SHPO) that are on the National Register of Historic Places, it is concluded that none of them are found within the corridor study limits. A review of the Interim Reports, Indiana Historic Sites and Structures Inventories for historic properties for Hamilton, Grant and Madison Counties reveals properties that are on, or adjacent to, the SR 37 study corridor. Most of the listed properties are classified as “Contributing” with a few as “Notable” and “Outstanding.” The properties identified are those that are adjacent to the existing SR 37 roadway, or within the bypass areas around Strawtown and Elwood. These properties can be seen in **Figure 3.2.1**. Due to the preliminary nature of this study, it is not clear if adverse effect, no adverse effect, or no effect would occur on these properties. Given the open and undeveloped nature of much of the corridor, especially in the potential by-pass areas, shifts in the corridor centerline can be made to minimize impacts. However, for each alternative, any potential impacts are included in the evaluation. Documentation of these Interim Reports can be found in the Appendix.

In addition to the interim reports, a windshield survey was conducted along the SR 37 corridor. The following properties were identified and noted during the field investigation:

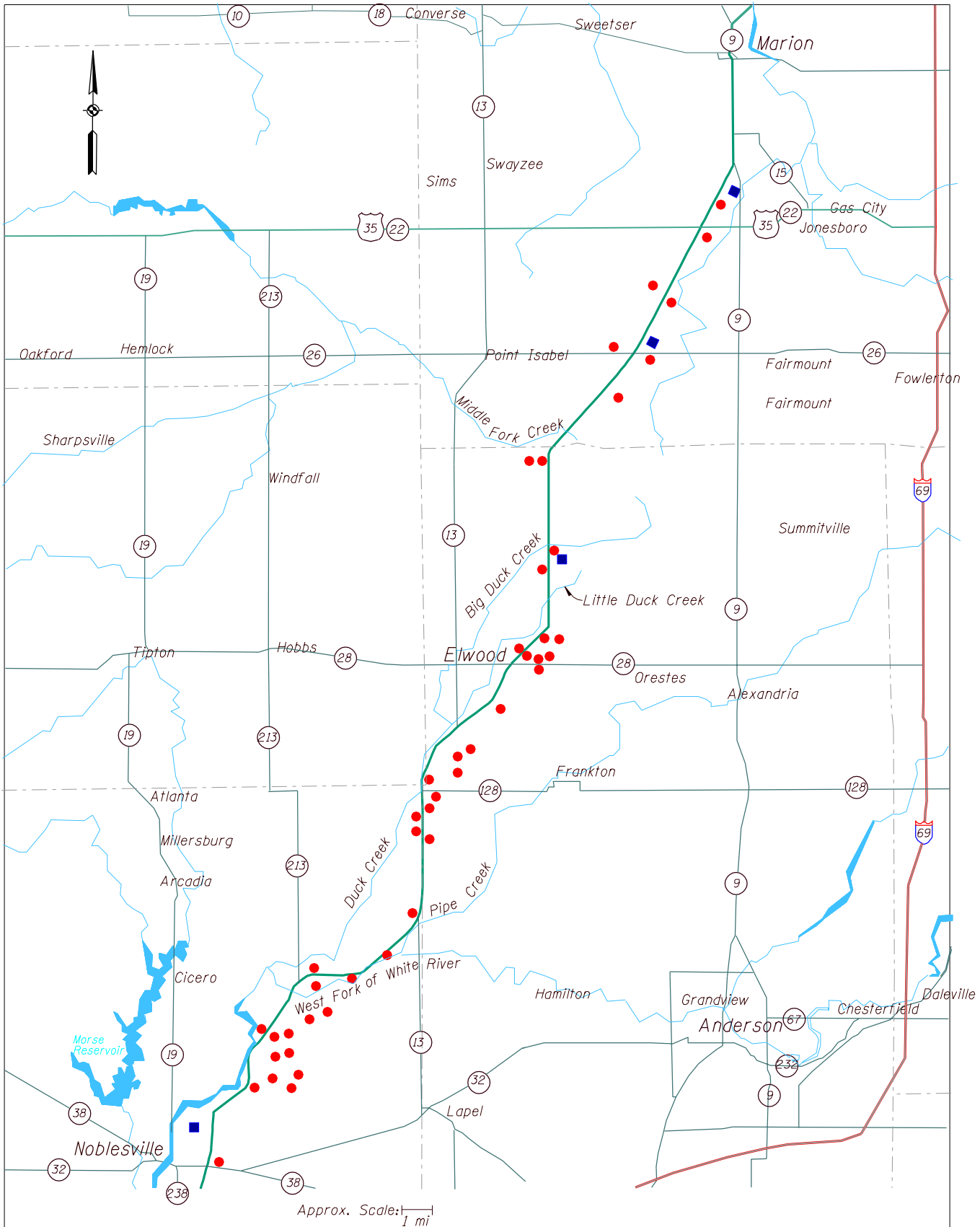
- Just north of Elwood, three motels exist. While the exact dates of construction are not known, the architecture suggests pre-World War II. Two of the three motels are still open for business while the third is being used for another purpose. These motels appear to be intact with no major or conspicuous additions. State Road 37 used to be one of the primary routes between Fort Wayne and Indianapolis prior to the construction of Interstate 69. These structures may be eligible to be on the register. Any of the “B” (bypass) alternatives around Elwood can eliminate impact to these motels. In addition, a constrained right of way using urban cross sections could be used on the existing alignment to reduce any adverse effect on these properties.
- At the south junction with SR 13, a travel plaza exists on the west-side of SR 37. This facility, mentioned in the interim reports, is closed. However, its architecture suggests it pre-dates WW II. This travel plaza, similar to the motels mentioned above, served SR 37 when it was one of the principle routes between Fort Wayne and Indianapolis. This facility may be eligible to be on the register. In addition, a brick residential structure just north of this travel plaza may potentially be eligible. Given the open, undeveloped nature

of the surrounding area, both of these facilities could easily be bypassed by shifting the SR 37 alignment away from the properties without any significant adverse effect.

- There are two cemeteries adjacent to SR 37. They are also mentioned in the interim reports. One is located just north of the SR 213 junction on the north side of SR 37. Since the land on the south side of SR 37 is undeveloped, any roadway widening can be achieved to the south, avoiding the cemetery. The other cemetery is located on the south side of SR 37 about 1.5 miles east of the first cemetery. Since the land on the north side is undeveloped, any roadway widening can be achieved to the north, avoiding the cemetery.

This information is being forwarded to the SHPO and other consulting parties in Section 106 for comments. Due to the size of the 40-mile corridor study, an Area of Potential Effect has not been drafted. In addition, the scope of the study is to determine what improvements, if any, are feasible as well as the location of the improvements. A complete and detailed account of historic properties will be conducted when the alternatives are advanced for further analysis in an environmental document. At that point, the adverse effects / non-adverse / no effect on historic properties can be determined as roadway cross sections and alignments become tangible.

The ranking of the alternatives is based on the potential that each alternative has in impacting an historic property. Alternatives 1 and 2 have no impact while Alternative 4B has the greatest impact of 29 properties. Alternatives 1 and 2 are given a rating of zero (0), and Alternative 4B is given a rating of 10. All other alternatives were rated based on an interpolation of the number of historic properties affected in proportion to 4B.



SR 37 EA / Corridor Study

Figure 3.2.1

Areas of Interest for Screening Analysis

- POTENTIAL HISTORIC PROPERTY
- SCHOOL



Potential for Affected Agricultural Farmland

With the exception of Alternative No. 1, all alternatives require additional land, with the majority being agricultural. Alternatives such as 3, 4 and 5 require more agricultural land than the other alternatives since they have multiple lane improvements to SR 37. The by-pass alternatives (3B, 4B, and 5B) require even more agricultural land due to the new alignments. The ranking of the alternatives is based on Alternative No. 1 having the least impact (no impact) and Alternative 4B impacting the most agricultural land (in acres). Alternative No. 1 is given a rating of 0.00 and Alternative 4B was given a rating of 10.0. All other alternatives were rated based on an interpolation of agricultural acres lost in proportion to 4B.

Potential Residential Relocations

In addition to right of way takes, residences along the study area could potentially be impacted by the alternatives. Alternatives that require a multi-lane cross section along the existing centerline of SR 37 have the highest impact on residences. In contrast to impacts to agricultural land, the bypass alternatives generally have lesser impacts on residences since the bypass alignments go through undeveloped areas. The ranking of the alternatives is based on Alternative No. 1 having no impact on residences, and Alternative No. 4A having the highest impact on the number of residences (430). Alternative No. 1 is given a rating of zero (0), and Alternative No. 4A is given a rating of 10. All other alternatives are rated based on an interpolation of number of residences lost in proportion to 4A.

Potential Business Relocations

Similar to residences, some businesses along the study area could potentially be impacted. Alternatives that require a multi-lane cross section along the existing centerline of SR 37 have the highest impact on businesses. The bypass alternatives generally have lesser impacts on businesses, since the bypass alignments go through undeveloped areas. The ranking of the alternatives is based on Alternative No. 1 having no impact, and Alternative No. 4A having the most impact on businesses (60). Alternative No. 1 is given a rating of zero (0), and Alternative No. 4A is given a rating of 10. All other alternatives are rated based on an interpolation of the number of businesses lost in proportion to 4B.

There are four service stations that exist along the study corridor. Only one, located on the southwest corner of the SR 37 and SR 28 intersection, is active. The other three stations are closed or razed. They are located at northeast corner of the SR 37 and US 35 intersection(razed), the southeast corner of the SR 37 and SR 28 intersection(razed), and the south junction of SR 37 and SR 13 (closed truck travel plaza). It is not clear if the underground fuel tanks have been removed at these sites or if any contaminated soil is present. However, these sites will need to be investigated when additional environmental documentation is undertaken.

Potential Affected 4(f) Resources

4(f) resources typically include any publicly owned public park, recreation area, wildlife or waterfowl refuges, or publicly or privately owned historic sites. The historic sites have already been covered. There are no known parks or recreational areas in the vicinity of the existing or proposed re-alignment segments of SR 37. There are four schools with attached playgrounds along the SR 37 study corridor that have the potential for being impacted by some of the alternatives. Schools are included in this section since the playgrounds may be open to the public and can be viewed as a park or recreational area. They may have Section 4(f) protection; this will be investigated further in the next phase of development. The location of these schools can be found in **Figure 3.2.1**. White River Elementary School is located at the southern end of the study area and west of SR 37. No alternative will have an impact on this school.

There are 3 other schools, all located north of SR 28 in Elwood, which may be impacted by improvements on SR 37. One school is the Duck Creek/Boone Township Elementary School located just east of SR 37 and south of Rigdon. This school, built in 1950, is now closed and boarded up. The second school is Liberty Elementary School. This school is located on the eastside of SR 37 and just north of the SR 26 intersection and it is in operation. The third school is Lakeview Christian School, located at the northern limit of the study area in Marion. The school is just east of and adjacent to SR 37. Given the absence of development on SR 37 in the vicinity of these schools, the impact from any improvements on SR 37 is very low to none since right of way acquisition can be made on the other side of SR 37, avoiding these schools.

Lastly, there are no known wildlife or waterfowl refuges in the vicinity of the existing and proposed re-alignments of SR 37.

Potential Affected Wetlands

The following rivers and creeks are in the vicinity of the State Route 37 alignment as well as by-pass alignments around Strawtown and Elwood. These waterways can be found in **Figure 3.2.1** in addition to several legal and drainage ditches:

- West Fork of the White River
- Little and Big Duck Creeks
- Pipe Creek
- Middle Fork Creek
- Deer Creek

A review of the National Wetland Inventory maps reveals a scattering of small wooded wetlands throughout the study corridor. Approximately 30 wooded wetlands are immediately adjacent to the existing or re-aligned portions of SR 37. A detailed environmental screening would delineate the exact limits of any wetlands in the corridor. Such a detailed and labor intensive screening is beyond the scope of this feasibility study. Any wetlands that are encountered can be either avoided outright or effectively mitigated.

The ranking of the alternatives is based on the potential that each alternative has in impacting a wetland identified in the National Wetland Inventory maps. Alternative No. 1 has no impact, while Alternative No. 4A has the greatest impact of just over 11 acres. Alternative No. 1 is given a rating of zero (0), and Alternative No. 4A is given a rating of 10. All other alternatives are rated based on an interpolation of the number of acres of wetlands affected in proportion to 4A.

3.3 ECONOMIC SCREENING CRITERIA

The SR 37 study was originally a feasibility study that included economic development as one of several components investigated. However after the study began, it was changed to a corridor study under Indiana's Streamlined Environmental Impact Statement Procedures. The economic analysis did not become part of the Purpose and Need of the study when the change to corridor study was made. However, it was decided that the economic development would be included in the corridor study to provide reference and aide in the decision making process especially if and when the project advanced to an Environmental Impact Study. The summary of this economic analysis can be found in the Appendix.

Travel Efficiency Feasibility

Travel efficiency was assessed for the alternatives studied. Travel efficiency is the conventional and traditional method of defining whether or not a highway improvement is economically feasible. According to this test, a highway improvement needs to be quite successful in reducing “per vehicle” operating costs, travel time and accident risk; and, it needs to have sufficient traffic volumes on the highway to attain the necessary level of highway user economic benefits.

If based solely on travel efficiency, the proposed improvements to SR 37 are not economically feasible. Alternatives 4A and 4B offer the highest Benefit-to-Cost ratios of 0.30 and 0.35 respectively. Generally speaking B/C ratios should equal or exceed 1.0 to be considered viable.

The reasons that the widening of SR 37 cannot be justified based solely on travel efficiency are:

- The traffic volumes for most of the length are too low. This means that the “per vehicle” efficiency gains are accruing to an insufficient number of vehicles.
- The roadway improvements themselves are not solving major problems; e.g., there are no distance savings, accident savings are modest, etc. Therefore, the “per vehicle” savings are small.

The rating of each alternative is based on the Net Present Value (2002) which was used to generate the Benefit/Cost (B/C) ratios. Alternative No. 1 has no net present value since it is the No Build alternative, while Alternative No. 4A has the highest net present value at -\$194.1 million. Alternative No. 1 is given a rating of zero (0), and Alternative No. 4A is given a rating of 10. All other alternatives are rated based on an interpolation of the net present value in proportion to 4A. The economic feasibility memo on the travel demand efficiency can be found in the Appendix. Further discussion of population and job growth projections can be found in the Economic Analysis document.

3.4 ENGINEERING SCREEN CRITERIA

These criteria take into consideration items such as the construction cost and constructability of the alternatives. Items such as traffic capacity and roadway accidents could be included here but are part of the purpose and need screening criteria.

Total Cost

The total cost is used to rank the alternatives. The costs are adjusted to 2006 values. The least expensive alternative, Alternative No. 1, is given the most favorable score. Alternative No. 4A, the freeway alternative on the existing alignment, is the most costly and is given the score of 10. All of the other alternatives are rated as a proportion of Alternative 4A.

Constructability

This criterion measures not only the magnitude of construction, but the length of time of construction as well as the magnitude of disruption to the public and adjacent properties. The no-build alternative, Alternative No. 1, is rated very low since only pre-programmed reconstruction and rehabilitation is being performed. The freeway alternatives, Alternatives No. 4A and 4B, are given a high rating by virtue of the inherent construction issues related to grade separations, access control, and interchange construction. All alternatives that included the Strawtown and Elwood bypasses also are rated as highly in terms of constructability.

Provide System Continuity

Each alternative is evaluated for system continuity, the provision of a consistent and uniform transportation utility in the study area. Alternatives that have a consistent number of lanes and cross section throughout the entire study area are rated favorably with a score of 1. Others that have lane additions or deletions are rated higher. Alternatives that have lane additions begin at the south end of the study area and terminate at logical points such as intersections with major roadways (Alternatives No. 5A, 5B, and 6) are given a middle score of 5. Alternatives No. 7A and 7B are given unfavorable ratings of 10 since the number of lanes on SR 37 fluctuate from two lanes south of SR 13, to four lanes north of SR 13, and, in the case of Alternative No. 7A, to two lanes north of SR 28 in Elwood. The freeway alternatives (Alternatives No. 4A and 4B) are rated poorly (10) since these freeway facilities originate and terminate in Noblesville and Marion where no other freeway exists. This is especially true due to the FEIS and ROD from the ConNECTions (NorthEast Corridor Transportation) study where the selected alternative calls for a 6-lane expressway (non-freeway) on SR 37 from I-69 to State Road 32 in Noblesville. Hence, there would be no continuity. With the exception of major terminals, freeways should not originate or terminate without direct connections with other interstate facilities.

3.5 SATISFY CONGRESSIONAL MANDATE

All of the alternatives are compared to the Congressional Federal mandate. Alternatives No. 1 through 6 meet the mandate and are given a ranking of 1. Alternatives No. 7A and 7B, however, do not meet the intent of the Congressional Mandate, since the improvements are proposed along SR 13 instead of improving SR 37 in Noblesville. These two alternatives are given a ranking of 10.

3.6 PUBLIC COMMENT INPUT RATING

All of the screening criteria are rated on a scale from zero (0) to 10, with 10 being the most undesirable. However, public comments collected in March 2002 indicated that the public does not view these criteria with parity. For example, an alternative's impact on 10 businesses would not be viewed the same as its impact on 100 residences. Hence, the ratings are adjusted to reflect the comments received from the public in the form of a survey. In March 2002, 44 surveys were received during the public information meetings. Most of the items that the public was asked to rank were found directly or indirectly in the screening criteria. In addition, most of the items that the public was surveyed on would have negative effects on their lives and quality of life. The order in which the public surveys ranked these items (from most important to least important) is:

1. Residential Properties Affected
2. Agricultural Properties Affected

3. Business Properties Affected
4. Wetlands Affected
5. Arch./Historic Properties Affected

These items, ranked by the public surveys, are given weights between 1.05 and 1.25. The weights are then applied to the matching screening criteria. These adjusted weights are applied to all appropriate screening criteria and are used to reflect the public's input in the screening of the alternatives.

3.7 SCREENING RESULTS

The screening criteria are summed and the totals are presented at the bottom of **Table 3.7.1**. For each alternative, the individual ratings, or ratings weighted from public input, are summed for the total ranking. With this rating system, the lower the overall score, the better the alternative is in terms of meeting the purpose and need, and other evaluation criteria. Conversely, the higher the overall score, the worse the alternative is in meeting the criteria. The total scores are used to eliminate the unfavorable alternatives with the highest scores. By inspection, Alternatives No. 4 and 7 have the highest overall scores. This is primarily due to the high costs in right of way, residential and business impacts.

The purpose of the screening is to determine if there is a fundamental engineering, safety or environmental fatal flaw, or failure to meet the purpose and need or Congressional mandate of the project. It appears that there are no fundamental flaws identified in engineering, safety or environmental criteria that would eliminate any alternative from further study. This leaves the purpose and need and Congressional mandate screening to qualify the alternatives for further study. While all screening criteria have relative importance in terms of assessing the impacts of the alternatives, the purpose and need screening criteria is essential since it is what has guided this study from the beginning. There are two screening criteria that address the purpose and need. The first screening criterion was whether crash frequency would be reduced. Alternative No. 1 was the only one that did not reduce crash frequency. The second screening criterion is satisfying the Level of Service of C or better by the year 2025. Alternatives No. 1, 2, 6, 7A and 7B do not provide the Level of Service C required at the horizon year. Furthermore, Alternatives No. 7A and 7B do not satisfy the Congressional mandate to study the feasibility of improvements to SR 37 in Noblesville, Elwood, and Marion.

In terms of engineering, safety, and environmental factors, no alternatives stand out in terms of a fatal flaw that would screen them out of consideration. All alternatives are constructible in an engineering sense, will improve safety compared to existing conditions, and do not have significant environmental impacts that cannot be either avoided or mitigated. Alternatives No. 4A and 4B have the greatest impacts as far as agricultural land acquisition and potential residential/business relocations are concerned. However, those impacts would not constitute a fatal flaw in themselves.

As noted earlier, none of the alternatives are feasible in terms of travel efficiency. This is due to a few items. First, projected traffic volumes on the SR 37 corridor for the most part are low. South of Elwood, projected 2025 traffic volumes are just exceeding 18,000 vehicles per day. North of Elwood, the projected traffic volumes do not exceed 18,000 vehicles per day. As noted in the capacity analysis section, the levels of service confirm this borderline range between a 2-lane and 4-lane facility. Despite the improvements, the per-vehicle savings are small. Second, the roadway improvement themselves are not solving major problems. There are no distance savings and accident savings are modest. Therefore, the per-vehicle savings are small. Third, an existing major route, Interstate 69, already exists between the project limits of this study. There would be more travel savings for motorists to Marion via I-69 than SR 37. Hence, the diversion of traffic to the improved SR 37, and the associated per-vehicle costs, would be small. This may indicate that any improvements would not only need to be justified for reasons other than travel efficiency but also that the improvements may not rise to the level of implementing changes in the statewide transportation plan.

At the January 23, 2004 Management Committee meeting, it was decided to remove Alternative 4(A and B) from further study. While this alternative satisfied the Purpose and Need, it was the most costly and had the greatest impacts on the environment. Furthermore, there was a degree of redundancy with Alternative 3. Like Alternative 4, alternative 3 provided a multi-laned facility throughout the study limits but at reduced costs and impacts. Lastly, alternatives 4A and 4B would not provide system continuity since the selected alternative in the ConNECTions (NorthEast Corridor Transportation) study calls for a 6-lane expressway (non-freeway) on SR 37 from I-69 to State Road 32 in Noblesville. Hence, there would be no continuity if alternatives 4A and 4B were used since they would be isolated freeways.

3.8 CONCLUSIONS

The alternatives which satisfy the Purpose and Need, the Congressional mandate are Alternatives No. 3A, 3B, 5A, and 5B. Alternatives No. 3A and 3B provide a four-lane expressway throughout the entire study area. Alternatives No. 5A and 5B provide a four-lane expressway from Noblesville to Elwood, and a two-lane improved facility from Elwood to Marion. The “A” alternatives follow the existing alignment while the “B” alternatives use by-pass alignments around Strawtown and Elwood. Aerial photographs depicting preliminary alternate alignments for the by-passes are included in the Appendix. Alternatives 2, 6, 7A, and 7B did not meet purpose and need (capacity) and were dismissed from further analysis. Alternatives 4A and 4B, did meet purpose and need, but it was decided by the Management Committee not to retain for further study due to the excessive costs outlined in Table 3.6.1 and its redundancy with Alternatives 3A and 3B. Alternative 1, the No Build alternative, was retained as required by NEPA to serve as base line comparison to the other alternatives.

Alternatives 3A, 3B, 5A, and 5B are being recommended for further evaluation in an Environmental Impact Statement.

<u>Table 3.7.1-Screening Analysis Summary</u>	SR 37 Corridor Alternatives											Public Comment
<u>Purpose and Need Screening Criteria</u>	1	2	3A	3B	4A	4B	5A	5B	6	7A	7B	
<u>Reduce Crash Frequency</u>	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Individual Rating	10.00	9.49	6.93	6.87	2.62	2.59	7.92	7.83	9.43	8.64	7.65	
<u>Provide LOS C or Better in 2025</u>	N	N	Y	Y	Y	Y	Y	Y	N	N	N	
Individual Rating	10.0	10.0	1.0	1.0	1.0	1.0	1.0	1.0	10.0	5.0	5.0	
<u>Environmental Scening Criteria</u>												
<u>Potential for Arch./Historic Properties Affected</u>	0	0	20	25	21	29	11	18	2	26	17	
Individual Rating	0.0	0.0	6.9	8.6	7.2	10.0	3.8	6.2	0.7	8.9	5.9	
Rating Weighted from Public Feedback	0.0	0.0	7.2	9.0	7.6	10.5	4.0	6.5	0.7	9.3	6.2	1.05
<u>Potential Agricultural Farmland Affected (Acres)</u>	0.0	64.0	342.8	540.3	693.2	1027.2	183.6	397.1	32.4	176.4	335.6	
Individual Rating	0.00	0.62	3.34	5.26	6.75	10.00	1.79	3.86	0.32	0.17	3.27	
Rating Weighted from Public Feedback	0.00	0.74	4.01	6.31	8.10	12.00	2.15	4.63	0.38	0.20	3.92	1.2
<u>Potential Business Properties Affected</u>	0	5	20	5	60	18	16	2	4	14	17	
Individual Rating	0.00	0.83	3.34	0.83	10.00	3.00	2.67	0.33	0.67	2.33	2.85	
Rating Weighted from Public Feedback	0.00	0.95	3.84	0.95	11.50	3.45	3.07	0.38	0.77	2.68	3.28	1.15
<u>Potential Residential Properties Affected</u>	0	28	142	87	430	211	110	56	35	76	108	
Individual Rating	0.00	0.65	3.30	2.02	10.00	4.91	2.56	1.30	0.81	1.77	2.51	
Rating Weighted from Public Feedback	0.00	0.81	4.13	2.53	12.50	6.14	3.20	1.63	1.01	2.21	3.14	1.25
<u>Potential for Schools / Parks / Cemeteries Affected</u>	None	None	Low	Low	Low	Low	Low	None	None	Low	None	
Individual Rating	0.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0	
<u>Potential for Wetlands Affected (Acres)</u>	0	0.95	5.18	4.86	11.09	9.53	2.75	2.43	0.51	5.4	2.05	
Individual Rating	1.0	0.9	4.7	4.4	10.0	8.6	2.5	2.2	0.5	4.9	1.8	
Rating Weighted from Public Feedback	1.1	1.0	5.2	4.8	11.0	9.5	2.8	2.4	0.6	5.4	2.0	1.1
<u>Economic Screening Criteria</u>												
<u>Travel Efficiency - Net Present Value (in \$ millions)</u>	0.0	-38.7	-126.9	-107.8	-194.1	-144.4	-100.7	-63.1	-31.5	-71.3	-102.1	
Individual Rating	1.0	2.0	6.5	5.6	10.0	7.4	5.2	3.3	1.6	3.7	5.3	
<u>Engineering Screening Criteria</u>												
<u>Total 2006 Cost (\$ millions)</u>	0.0	97.0	314.4	267.0	600.4	507.0	245.0	197.6	73.1	164.7	230.0	
Individual Rating	0.00	1.62	5.24	4.45	10.00	8.44	4.08	3.29	1.22	2.74	3.83	
<u>Provide System Continuity?</u>	Yes	Yes	Yes	Yes	No	No	Partial	Partial	Partial	No	No	
Individual Rating	1.0	1.0	1.0	1.0	10.0	10.0	5.0	5.0	5.0	10.0	10.0	
<u>Constructability</u>	Very Low	Low	High	Very High	Very High	Very High	High	Very High	Low	Moderate	High	
Individual Rating	0	2.5	7.5	10	10	10	7.5	10	2.5	5	7.5	
<u>Other</u>												
<u>Satisfy Congressional Mandate</u>	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	
	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	10.0	10.0	
<u>Total Ranking</u>	24.10	31.10	54.60	54.54	96.28	83.02	47.85	46.94	34.22	65.88	67.75	
	*	*							*	**	**	

* - Failed Purpose and Need Screening Criteria

** - Failed Purpose and Need and Congressional Mandate Criteria

4.0 SECTIONS OF INDEPENDENT UTILITY

One goal of this EA/Corridor study is to identify both minor and substantial transportation needs for the corridor under study. Based on the identified minor and substantial transportation needs, the logical termini for these transportation needs must also be identified, as well as the appropriate level of NEPA analysis. Some minor transportation needs may include intersection improvements within the corridor that have an existing level of service or safety deficiency and have independent utility from the more substantial transportation needs. Substantial transportation needs may include adding travel lanes or relocation of facilities and these needs must also have independent utility.

Sections of Independent Utility for the SR 37 study are based on guidance from the Federal Highway Administration's Memorandum on Guidance on the Development of Logical Project Termini (November 5, 1993) which reflects concepts and objectives promoted in regulations 23 CFR 771.111(f). This regulation outlines the following three general principals:

"In order to ensure meaningful, evaluation of alternatives and to avoid commitments to transportation improvements before they are fully evaluated, the action evaluated in each environmental impact statement (EIS) or finding of no significant impact (FONSI) shall:

1. Connect logical termini and be of sufficient length to address environmental matters on a broad scope;
2. Have independent utility of independent significance, i.e., be useable and be a reasonable expenditure even if no additional transportation improvements in the area are made and
3. Not restrict consideration of alternatives for other reasonably foreseeable transportation improvements."

The termini for this study include the southern and northern termini of the study. In addition, the alternatives themselves reveal possible limits of logical termini. Alternatives 3, 4, 5 and 7 contain multi-lane portions of SR 37 that terminate in Elwood. Review of existing and projected traffic volumes has shown that there is a noticeable decline in traffic volumes north of Elwood. Likewise, capacity analyses have shown a stronger need for additional through lanes south of Elwood. The "A" and "B" alternatives of 3, 4, 5 and 7 were based on these observances. The termini for section of independent utility are reasonable where the need for additional through lanes originate or terminate. This would be logical termini since the individual sections can stand alone from one another. For this study the need for additional lanes may end north of SR 28.

In addition, the nature of some of the alternatives studied involved by-pass routes around portions of the exiting alignment. These possible by-pass re-locations will also influence logical termini because of their inherent tie-in locations with the existing alignments. The environmental impacts will be most notable on the segments of SR 37 where by-pass routes are considered. Both of the by-pass routes occur south of Elwood. Furthermore, the by-pass routes occur in the areas of SR 37

where the need for additional through lanes are the strongest; the by-pass routes would most likely involve additional through lanes. Given this, one section of independent utility can include both by-pass corridors not just due to the environmental impacts but also due to the need for added travel lanes.

The Sections of Independent Utility for the State Road 37 Study will be as follows and are shown on **Figure 4.0.1:**

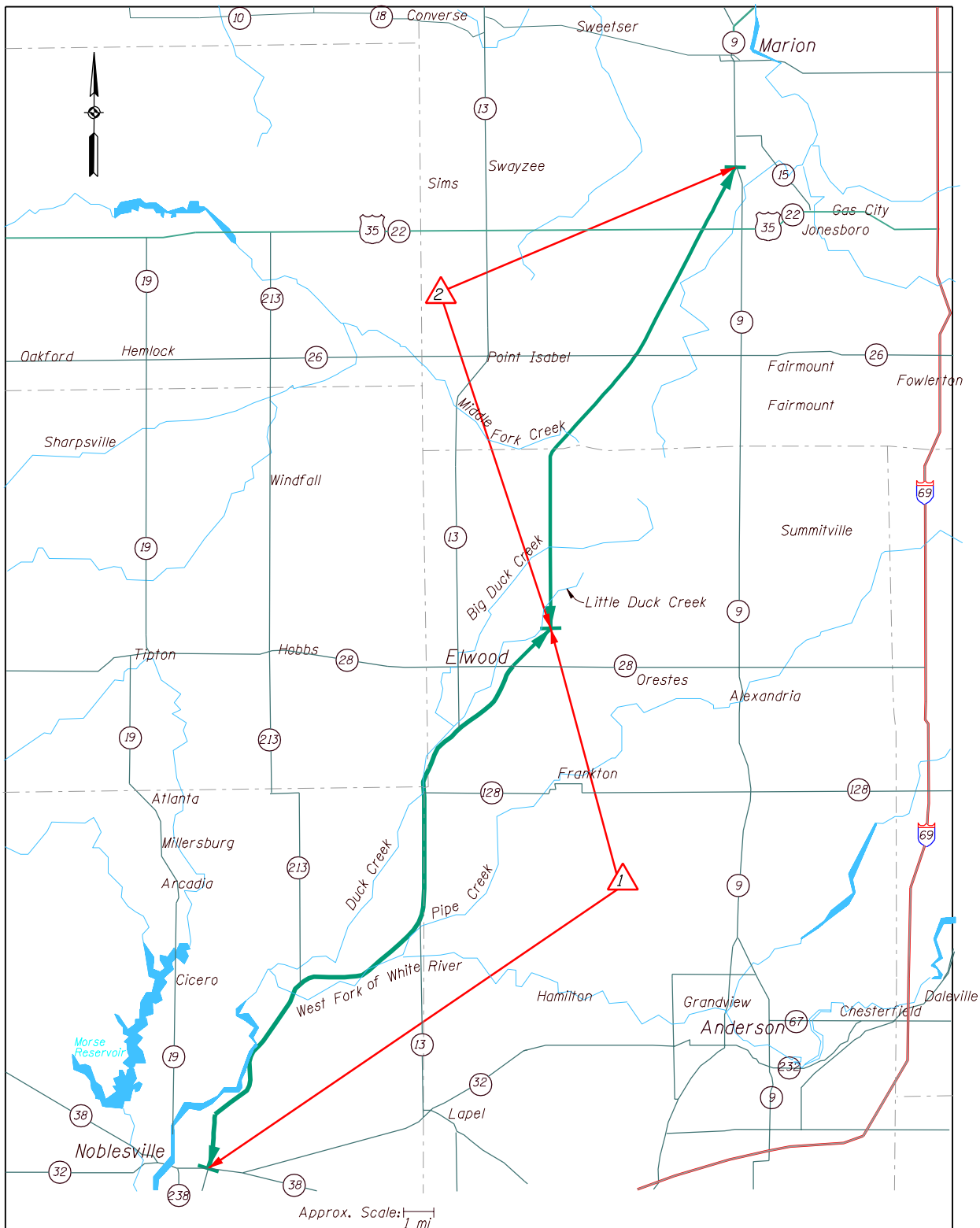
1. SR 32 to CR 1300 N (approximately 1.25 miles north of SR 28)
2. CR 1300 N (approximately 1.25 miles north of SR 28) to SR 9

Section 1: This section commences at the southern terminus of the project. It would also tie into the northern terminus of the NE Connections study that was recently completed. In the Final Environmental Impact Study report, improvements to SR 37 from SR 32 to Allisonville Road are mentioned. These improvements involve the 4-lane expressway SR 37. The southern terminus will be able to accommodate any improvements stemming from either study.

This section also terminates just north of the CR 1300 N intersection north of Elwood. Within this section, projected traffic volumes exceed or approach the threshold of the use of multiple lanes. In addition, the potential by-passes around Strawtown and Elwood exist. The exact location of these by-passes is fluid (see Appendix for preliminary alignments). In between these two by-passes is a four-mile long section where the improvements would follow the existing alignment.


Section 2: This section begins just north of CR 1300 N and terminates at the northern terminus of the study in Marion. Projected traffic volumes do not exceed the threshold of the use of multiple lanes. The capacity needs for this section are not as convincing as those in Section 2. While there are intersections of state roads such as SR 22 / US 35 and SR 26 within this segment, the prevailing traffic patterns on this segment are primarily between Marion and Elwood. Lastly, there are no potential by-passes in this section. Roadway improvements could occur on the existing alignment. Hence, this segment should be investigated as a whole since its capacity and alignment needs are independent of improvements south of CR 1300N.

The State Road 37 corridor is intersected by major crossroads, many of which serve as traffic generators. The crossroads are under the jurisdiction of the state, counties or cities. These intersections can be identified as separate sections of independent utility especially if local development is accelerated and capacity needs precede the scheduling of larger sections of the corridor. Given the potential for development along the majority of the study corridor, improvements to individual intersections can be performed ahead of major corridor improvements as traffic conditions warrant.



SR 37 EA / Corridor Study

Figure 4.0.1
Sections Of Independent Utility

 - Section Of Independent Utility



4.1 RECOMMENDATIONS AND SUMMARIES FOR PROJECTS OF INDEPENDENT UTILITY

The primary focus of the study was to identify potential solutions to provide more efficient and safe travel on SR 37. Access control is critical to developing efficient, high capacity corridors. It is recommended that, for new terrain alternatives, limited access right-of-way be purchased. Closure of some local roads should be considered. For alternatives that utilize the existing SR 37 alignment, it is recommended to reduce and combine access points as much as feasible. Partial access control should be purchased to help control future access. It should be noted that all recommended alternatives should provide an adequate LOS as outlined in the purpose and need report. All recommended improvements are to meet current INDOT design standards.

Based on preliminary analysis, the following projects of independent utility are recommended.

- 1 SR 32 to SR 13 (South Junction)**
- 2 SR 13 (South Junction) to CR 1300N (North of SR 28)**
- 3 CR 1300N to SR 9**

Project 1 will involve additional travel lanes along the existing alignment throughout most of the project. Within this project, wetlands, historic properties and numerous residences have been identified. The majority of these residences and businesses are adjacent to the existing right of way and will be directly affected by this lane addition. In addition, this section may involve new roadway construction on new terrain around Strawtown and has the potential to directly affect wetlands, farmlands, wildlife, historic properties not to mention addition residences and businesses. Given these potentially substantial impacts, a more detailed environmental document may be needed. This will be assessed in the next level of environmental study. The current and proposed traffic volumes and levels of service give priority to this project. It will be addressed before 2025.

Project 2 goes from SR 13 to CR 1300N (north of SR 28) and will also involve additional travel lanes and a potential by pass around Elwood depending on the alternative selected. Similar to Section 1, numerous residences and some businesses are adjacent to the existing right of way. In addition, there are creeks, farmland and some wetlands that abut the right of way. Any widening of the existing right of way in this section may yield potentially substantial impacts on the environment including residences, wetlands, and historic properties. Given the current statewide transportation priorities, this section will likely be addressed beyond INDOT's current Long Range Plan which ends in 2025.

Project 3 goes from CR 1300N to SR 9 and will also involve additional travel lanes depending on the alternative selected. Similar to the first two sections, numerous residences and some businesses are adjacent to the existing right of way. In addition, there are creeks, farmland and some wetlands that abut the right of way. Any widening of the existing right of way in this section may yield potentially substantial impacts on the environment including residences, wetlands, and historic properties.

Given the current statewide transportation priorities, this section will likely be addressed beyond INDOT's current Long Range Plan which ends in 2025.

Following are descriptions of each individual project of independent utility. These project summaries include a proposed improvement, purpose and need, priority, alternatives, traffic, schedule, phasing, and construction cost.

Project of Independent Utility #1
SR 32 to SR 13 (South Junction)

Proposed Improvement: Road Construction/New Road Construction (approx. 14 miles)

Purpose and Need: Improve Capacity and Reduce Crash Frequency

Priority: The existing and forecasted traffic volumes as well as the potential for growth along this section warrants a Medium to High rating.

Alternative(s): Alternatives 3 and 5 will be the preliminary alternatives for the environmental impact statement. The “No-build” Alternative 1 will also be included for comparison purposes. Both “A” and “B” sub-alternatives that include the by-pass option around Strawtown will be included.

From Allisonville Road to SR 13 (south junction), this section can either accommodate improvements on the existing alignment or on a by-pass alignment east of Strawtown. If the existing alignment is selected, then lower design speeds with constrained alignment and cross sectional elements are likely. If the by-pass alignment is selected, then desirable design speeds, alignment, and cross sections are possible. Different by-pass alignments can be realized given the undeveloped nature of the land. Existing residential, commercial developments serve as constraints as to where the by-pass alignment can be located. Similarly, the crossing of the White River as well as the location of wetlands and historic sites, will also influence the location of a by-pass alignment.

Whether the bypass option is pursued or not, traffic control and auxiliary lane needs will need to be assessed at the major cross streets. Given that the surrounded area has high development potential, scoping of the final design should consider the latest land use changes and associated traffic demands. The purchasing of limited access rights within this section should be considered in order to maintain or control the number of private access openings.

Estimated Range of Traffic (2025): 13,000 - 28,000 vpd

Schedule: Near-term: Improvements at major intersections (i.e.: 206th Street, 216th Street, SR 213, etc.) may be subject to land use developments which may precede comprehensive improvements to this project. Long-term: The projected traffic volumes justify the need for a multiple lane roadway. Within this project, wetlands, historic properties and numerous residences have been identified. The majority of these residences and businesses are adjacent to the existing right of way and will be directly affected by this lane addition. Given these potentially substantial impacts, a more detailed environmental documental may be needed.

Below are the potential impacts that this project of independent utility may have on adjacent properties and the environment. The information is broken down by roadway sections including the bypass alignment. The impacts are potential and could be minimized with alignment shifts and constraining the right of way. This information will be used as reference to determine what level of environmental study will be needed.

Segment	Land Acquisition (Acres)				Relocations		Environmental	
	Agri.	Resid.	Bus.	Indust.	Resid.	Bus.	Historic Prop.	Wetland (Ac.)
SR 32 to Allisonville Rd	1.6	3.2	3.2	0	0	0	0	0.23
Allisonville Rd to SR 213	30.8	44	13.2	0	35	4	2	0.28
SR 213 to Strawtown Byp.	18	8.3	1.4	0	3	0	1	0.69
Strawtown Bypass to SR 13	27.2	4.5	0.3	0	9	1	2	0.23
Strawtown Bypass	153.2	11.9	3.4	1.7	15	0	6	2.3
Total Impacts								
Original Align. (3A & 5A)	77.6	60	18.1	0	47	5	5	1.43
Bypass Align. (3B & 5B)	182	19.6	6.9	1.7	24	1	8	2.76

Phasing: This section is large enough that phasing of construction is both possible and practical. Phasing can be subject to pending capacity needs, funding and potential by-pass routes. Actual limits of phasing would be decided in the design stage. The following are potential phases that this section can be subdivided into. Traffic volumes and the resulting levels of service may be a good indicator for timing since it is part of the purpose and need also an important attribute in traffic operations. The ranking reflects the need of improvements (based on traffic and levels of service) subject to the time of programming and design activities:

- Phase 1A - SR 32 to Allisonville Road **(After 2015)**
- Phase 1B - Allisonville Road to SR 13 (So. Jct.) including the Strawtown bypass **(After 2015)**

Construction Costs: The costs for this project of independent utility are also presented. It is broken down into the phases as well as the by pass alternatives. The relatively high percentages for right of way in Phases 1A and 1B (original alignment) is due to the built up nature of the corridor especially for commercial land.

Phase	Length miles	2006 Cost (\$1,000)	Cost/lane/mile (\$1,000)	Road Cost %	Bridge Cost %	R/W Cost %
1A	2.55	\$9,900	\$971	62	12	26
1B	10.98 / 9.66	\$98,400 / \$69,300*	\$2,240/ \$1,793*	70/80	6/7	24/13
Total	13.53/12.21	\$108,300/\$79,200*	\$2,001/\$1,622*	69/77	7/8	24/15

XXX/XXX: Alternative 3A or 5A (Existing Align.)/Alternative 3B or 5B (By Pass Align.)

*: By Pass Alignment that is constructed initially with 4-lanes.

For comparison and information purposes, the construction cost of the by pass alignment (3B & 5B) with only 2-lanes is presented below. A 2-lane section would continue to the SR 13 South Junction. A 4-lane facility would eventually be constructed. The right-of-way for a 4-lane expressway would be part of the initial construction.

Phase	Length miles	2006 Cost (\$1,000)	Cost/lane/mile (\$1,000)	Road Cost %	Bridge Cost %	R/W Cost %
1A	2.55	\$9,900	\$971	62	12	26
1B	9.66	\$27,000**	\$699**	47	18	35
Total	12.21	\$36,900**	\$756**	51	16	32

****:** By Pass Alignment that is constructed initially with 2-lanes.

Project of Independent Utility #2
SR 13 (South Junction) to CR 1300 North (Madison Co.)

Proposed Improvement: Road Construction/New Road Construction (approx. 13 miles)

Purpose and Need: Improve Capacity and Reduce Crash Frequency

Priority: Low

Alternative(s): Alternatives 3 and 5 will be the preliminary alternatives for this project. The “No-build” Alternative 1 will also be included for comparison purposes. Both “A” and “B” sub-alternatives that include the by-pass option around Elwood will be included.

The area where a bypass is possible is east of Elwood between SR 128 and CR 1300 North. If the existing alignment is selected, lower design speeds and an urban cross section is likely. An urban cross section would be acceptable since the existing alignment is traversing through Elwood and SR 37 is being flanked by development. If the by-pass alignment is selected then desirable design speed, alignment, and a rural cross section are possible. Given the undeveloped nature of the land east of Elwood, different by-pass alignments can be realized. Existing residential, commercial developments serve as constraints as to where the by-pass alignment can be located. Similarly, the location of wetlands and historic sites will also influence the location of a by-pass alignment.

Whether the bypass option is pursued or not, traffic control and auxiliary lane needs will need to be assessed at the major cross streets. Given that the surrounded area has high development potential, scoping of the final design should consider the latest land use changes and associated traffic demands. The purchasing of limited access rights within this section should be considered in order to maintain or control the number of private access openings.

Estimated Range of Traffic (2025): 8,000 - 22,000 vpd

Schedule: Near-term: Improvements at major intersections (i.e.: SR 13, SR 128, SR 28, etc.) may be subject to land use developments which may precede comprehensive improvements to this project. Long-term: The projected traffic volumes justify the need for a multiple lane roadway. A detailed environmental study should be prepared for this segment to assess the exact impact that a by-pass alternative would involve. Given the projected traffic volumes and INDOT’s current transportation priorities, this project will likely be preformed after 2025.

Phasing: This section is large enough that phasing of construction is both possible and practical. Phasing can be subject to pending capacity needs, funding and potential by-pass routes. Actual limits of phasing would be decided in the design stage, after a complete environmental document is finished. The following are potential phases that this section can be subdivided into. Traffic volumes and the resulting levels of service may be a good indicator for timing since it is part of the purpose and need also an important attribute in traffic operations. The ranking reflects the need of improvements (based on traffic and levels of service) subject to the time of programming and design activities:

- Phase 2A - SR 13 (South Jct.) to Elwood By Pass **(After 2025)**
- Phase 2B – Elwood By Pass to CR 1300 N including the Elwood bypass **(After 2025)**

Construction Costs: The costs for this project of independent utility are also presented. It is broken down into the phases as well as the by pass alternatives.

Phase	Length miles	2006 Cost (\$1,000)	Cost/lane/mile (\$1,000)	Road Cost %	Bridge Cost %	R/W Cost %
2A	6.07	\$37,800	\$1557	88	4	8
2B	7.02/7.19	\$65,800 / \$47,500	\$2,343/ \$1,692	59/83	0/8	41/9
Total	13.09/13.26	\$103,600/\$85,300	\$1,979/\$1,608	70/85	1/6	29/9

XXX/XXX: Alternative 3A or 5A/Alternative 3B or 5B

Potential Project of Independent Utility #3
CR 1300 (Madison Co.) to SR 9

Proposed Improvement: Road Reconstruction (approx. 17 miles)

Purpose and Need: Increase Capacity and Reduce Crash Frequency

Priority: Low

Alternative(s): Alternatives 3 and 5 will be the preliminary alternatives for this project. The “No-build” Alternative 1 will also be included for comparison purposes.

If Alternative 3 is selected, additional right-of-way will be necessary. It will be acquired on either one side or both sides of the existing right-of-way to accommodate the additional travel lanes. If alternative 5 is selected, then improvements to SR 37 will be accomplished mostly within the existing right-of-way. Additional right-of-way may be needed in the vicinity of intersections of state and county roads. In addition, partial or limited access right-of-way should be considered and access rights protected along this segment.

The need for additional turning lanes and traffic signalization should be considered for the SR 26, US 35/SR 26 intersections as well as major county road intersections. The specific needs for these improvements will be subject to specific land use developments and local traffic patterns.

Estimated Range of Traffic (2025): 13,000 - 19,000 vpd

Schedule: Near-term: Improvements at major intersections (i.e.: SR 26, SR 22 / US 35, SR 9, etc.) may be subject to land use developments which may precede comprehensive improvements to this project. Long-term: The projected LOS for the 2025 design year is just beginning to fall below LOS “C”. There is no existing capacity or safety reason to program this segment immediately. This project should therefore be programmed with consideration to existing pavement life. If alternative 3 is selected, additional right-of-way will be necessary. This right-of-way acquisition could be significant and may affect numerous existing properties; a detailed environmental study should be prepared for this segment to assess the exact impact that additional right-of-way would involve. Given the projected traffic volumes and INDOT’s current transportation priorities, this project will likely be preformed after 2025.

Phasing: This section is large enough that phasing of construction is both possible and practical. Phasing can be subject to pending capacity needs and funding. Actual limits of phasing **would be decided in the design stage, after a complete environmental document is finished.** The following are potential phases that this section can be subdivided into. Traffic volumes and the resulting levels of service may be a good indicator for timing since it is part of the purpose and need also an important attribute in traffic operations. The ranking reflects the need of improvements (based on traffic and levels of service) subject to the time of programming and design activities:

- Phase 3A – CR 1300N to SR 26 **(After 2025)**
- Phase 3B – SR 26 to US 35/SR 22 **(After 2025)**
- Phase 3C – US 35/SR 22 to SR 9 **(After 2025)**

Construction Costs: The costs for this project of independent utility are also presented. It is broken down into the phases as well as the by pass alternatives.

Phase	Length Miles	2006 Cost (\$1,000)	Cost/lane/mile (\$1,000)	Road Cost %	Bridge Cost %	R/W Cost %
3A	9.67	\$58,300/\$18,600	\$1,507/\$481	91/96	0/0	9/4
3B	4.57	\$27,700 / \$9,400	\$1,515/ \$514	90/93	0/0	10/7
3C	2.43	\$16,500/\$5,100	\$1,698/\$525	81/83	7/9	12/8
Total	16.67	\$102,500/\$33,100	\$1,537/\$496	89/93	1/1	10/6

XXX/XXX: Alternative 3/Alternative 5

Below is the summary of costs for all of the screened alternatives for the entire length of the corridor. The costs include costs per lane per mile as well as the percentage of costs for the roadway, bridge, and right of way attributes. The costs are in 2006 values.

Alternative	Total Cost	Cost/lane/mi	Roadway %	Bridge %	R/W %
3A	\$314,400	\$1,816	75	3	22
3B	\$267,000	\$1,584	83	5	12
5A	\$245,000	\$1,415	72	4	24
5B	\$197,600	\$1,172	82	6	12